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Published Monthly at Indianapolis, Indiana

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Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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With the Editor

IT IS not at all unusual for something that is new and novel to get a share of interest—for a time—but to retain interest month after month and year after year, when so many affairs and attractions are pressing for attention, is a severe test for anything you can mention. Value, service and frequently renewed attractiveness, however, exercise a powerful influence in maintaining continued interest. These features we endeavor to incorporate in INDUSTRIAL FINISHING, for the benefit of the entire industry that INDUSTRIAL FINISHING serves.

In this connection we feel prompted to quote from a recent letter by Mr. Caddick, Manager of A. J. Stevens & Co., manufacturers of Wireless and Scientific Instruments, Wolverhampton, England. Mr. Caddick says:

"I should just like to say a word regarding this publication. I have read many books and papers dealing with this subject, but out of the many I have found that your INDUSTRIAL FINISHING has proved to be the most valuable of all, as the information which it gives is most unique, and what I am especially pleased with is that it deals with this subject in a plain straightforward way, so that no matter who the person may be, he can clearly understand same without having to bother his head."

Technical research men, connected with the largest laboratories in the United States, evidently like to read INDUSTRIAL FINISHING because its editorial matter isn't too "heavily technical," since one of them writes, "Your very useful little magazine comes as a friend in need and is invaluable to every research man, in that it presents the practical side which we all need and seldom have the chance to see, as in actual shop practice."

We intend to continue and improve INDUSTRIAL FINISHING along the lines that meet with this generously-expressed approval.

W. H. Rohr

Managing Editor

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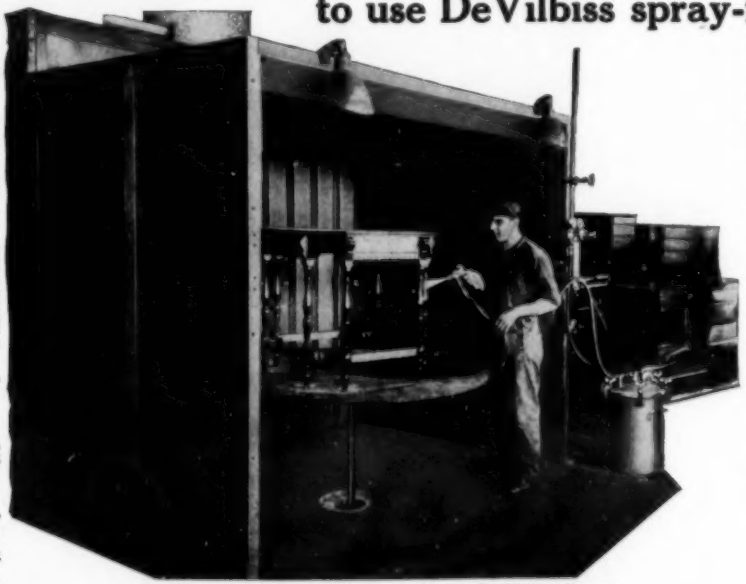

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Past, Present and Future

Lacquer Application for Best Results

An expert on practical production finishing points out logical reasons for prevailing methods of putting on and polishing lacquer finishes, and ventures a prediction as to what the future has in store along this line

By a Superintendent of Finishing

IN THE December issue of INDUSTRIAL FINISHING, page 17, the following paragraph appeared:

"The finish of the near future will not be varnish over lacquer for a luster, nor polishing, but a high gloss colored lacquer for the last coat, sprayed by a skillful sprayer who understands his gun, his movements, knows his material and how to apply it and is not afraid to spray on enough material."

In theory this sounds perfectly plausible, but in practice it is not feasible.

I am commenting as one who has had many years' experience of practical finishing. I used one of the first spraying devices introduced, and have tried out and aided in developing many of the spraying apparatus which have been placed on the market in the last 15 years.

Manufacturers, desiring to perfect their devices for practical uses, have voluntarily brought their unfinished and imperfect creations into our plant and asked my aid and suggestions. This is all mentioned merely that readers may know I am questioning the above published statement as an experienced and capable finisher, and not a theorist or novice.

Rubbing Is Necessary

There will never be any chance of the finish, luster or last coat (whichever you may term it) being sprayed on and not rubbed, except on the very cheapest grade of products, where the smoothness of the finished appearance does not count. In the first place, it is not practical, because spraying is used to speed up production work. If a workman were to attempt the slow, careful application of a finishing coat of lacquer or varnish, with the spray-gun, he would defeat the object of spraying. It would be much easier and simpler to flow with a brush, or use a "Floco" outfit.

Before the introduction of lacquer, when varnishes were used to the exclusion of almost every other finish for high-grade furniture and automobiles, it was not possible to spray on the last coat —or the finish coat. Automobile factories sprayed up to the finish coat, rubbed and then flowed the finish or clear coat. Furniture manufacturers, whose products required high polish, rubbed the finish coat and rotten-stoned it to attain the high gloss. In some instances they brushed the finishing coat—or brush-flowed it. Piano factories invariably obtained luster by rotten-stoning. I

neglected to mention that some of the automobile factories sprayed only the undercoats, and hand-brushed the color varnish coats.

When a lacquer or varnish is applied by spraying (more especially the former) the surface is rippled, orange-peeled or pitted (which ever term you prefer to use) by the action of air in depositing the material onto the surface. Some authorities claim evaporation does it, others contend that the air itself pits the surface. I'll admit that small objects can be flowed with a spray-gun or air brush. Large surfaces cannot be flowed properly nor evenly in that manner, and there would be nothing gained by attempting it with a regulation spray-gun. I am speaking from a production point of view.

A Prediction

If predictions are in order let me offer mine: The finish of the future, in the majority of instances, will be lacquer. All coats will be sprayed and the final coat will be *mechanically* rubbed and polished to an exceptionally high luster, when required, without effecting the durability of the finishing material.

If the lacquer is lengthened sufficiently for it to be flowed on, either by brush, "Floco" process, or spray-gun, we will be getting back again to the varnish insofar as durability is concerned, because the addition of gums or oils are necessary for flowing qualities.

The chief value of lacquer is its durability. This must be preserved if lacquer continues to be used. Mechanical means and methods, for quickly smoothing and polishing the final sprayed coat of lacquer, is the solution of the finishing problem and it's available, I understand.

Don't Sacrifice Quality

I hope the lacquer manufacturers will not sacrifice the durability of their products, simply to satisfy a desire for cheaper finishes by some manufacturers of cheap products. If dipping or flowing lacquers are required, let the manufacturer differentiate by clearly naming them, so that the public will not be misled between the durability of the two finishes, because there is a difference.

Recently I heard lacquers severely condemned because the person had found that the article he used—finished with *brushing lacquer*—was not holding up.

Important for the Beginner in Striping

Regarding an article in the December issue of INDUSTRIAL FINISHING on "Striping for the Beginner," Mr. Mannhardt advises the beginner to mix stripe color to the "proper consistency." How is the beginner to determine just what is the proper consistency for striping? Mr. Mannhardt also states, "Keep the striping color tacky and sticky enough to hold the hairs of the brush together."

This statement, to my knowledge, would not necessarily be the proper consistency for striping, from the beginner's point of view, because the stripe color may be mixed at different consistencies and still hold the hairs of the brush together, but it may be an improper mixture for striping.

I will take the opportunity at this time to explain, to the best of my ability, one of the most important factors in striping for the beginner—one which I feel

Mr. Mannhardt has neglected in his article.

Consistencies of Stripe Mixture

I believe it a good policy for the beginner to know the different results obtained with different consistencies of stripe mixtures, when applying material. For example, he should know:

1—The results of thin stripe-mixtures;

2—The results of stiff or tacky stripe-mixtures;

3—What is the proper stripe-mixture, and

4—The kind of material the beginner may use to best advantage for practice.

First of all, the final mixing of stripe material is done on the pallette, and the consistency of each stripe material is judged solely by feeling, with the fingers, the pull on the striping brush while mixing on the pallette. The beginner must, by all means, familiarize himself with the work to the extent that he will readily recognize that certain feeling of the pull on the brush, when clean-cut lines may be obtained.

When the mixture is too thin, there will be no pull on the brush while mixing on the pallette. The stripe material will flow and spread and become irregular of its own accord, when applied to the surface, and it may be noticed that the paint will flow from the brush very rapidly, thereby causing the brush to be very difficult to control. This thin consistency is caused by using too much turpentine (or thinner).

When stripe material is too stiff or tacky, the striping brush will pull hard when mixing on the pallette; the material will not have the proper flow from the brush when applied to the surface. The stripe will not be clean cut, but will show uneven edges. The brush will skip or jump along over the surface without making a stripe. To remedy this condition add a very little turpentine and work through thoroughly on the pallette.

The proper mixture for striping is regulated, as stated in a previous paragraph, by feeling the pull or drag on the brush when pallette-mixing. The proper mixture requires practice, as does also the drawing of a straight line. In fact, both must be practiced together for proper results. —C. S.

Pittsburgh Lacquer & Chemical Co. Sales Conference

The sales conference, which was attended by the entire sales force of the Pittsburgh Lacquer & Chemical Co., was held in its general office, Farmers Bank Building, Pittsburgh, Pa., December 27th and 28th. The meeting was addressed by Ralph W. Harbison, President.

Valentine & Co. Exhibited Jewel Colors for Automobiles

A new note in automobile color combinations has been struck by Valentine & Co. in what they appropriately term their "Jewel Colors" exhibited at the Hotel Commodore, New York City, during the week of the Automobile Show in January.

Before bringing out these Jewel Colors the Company's experts first studied the magnificent displays of precious stones at The Field Museum in Chicago and later, the American Museum of Natural History in New York. There were jewels in the matrix, Nature's own setting, their sparkling colors set off on rich backgrounds in great variety. There indeed were color combinations upon which even the greatest artist could not improve!

The resulting panels exhibited in Nitro-Valspar—many of them beside the original jewels-in-matrix from which the color combinations were obtained—were well worth the close scrutiny they received at the New York Show.

Interesting and instructive notes which reveal the present trends in styles of furniture finishing—identifying the woods, finishes, colors and decorative features employed to beautify furniture for every room in the home

Chicago Furniture Show Finishes

By R. G. Meade

DO FURNITURE styles and finish colors change in six months? To the trained observer, the mid-winter offerings at Chicago show a number of important changes from the exhibits of last August, which in their turn represented innovations as against the previous January. The era when Jacobean, and William and Mary designs came out almost uniform in coloring and outline is gone. Today ingenuity is being drawn upon to the point where one wonders how the race can be kept up.

A General Survey

It is the case goods line that sets the pace. Here we see the vogue for Spanish dying out, and a swinging back to period adaptations of Adam, Hepplewhite and American Colonial. With it comes a trend toward mahogany, finished in a richer but more delicate tone—not so deep as Colonial red, yet away from the old time brown. Walnut is browner in tone—neither light nor dark—and without red or greenish cast. Maple varies from very near the lightness of natural, to the shade of walnut, but the earlier reddish amber has disappeared.

Shading has become universal, but the old "doughnut" or "watermelon" manner of application has gone out in favor of a far more delicate treatment. Browner in tone, shading has withdrawn from the centers of panels to the edges, mouldings and carvings, where it appears as a bare suggestion. On enameled furniture it is even more refined, so much so that it is often hard to place.

Overlay and trim woods in fancy veneers have increased on the better grades of furniture—conspicuous in natural markings, but inconspicuous through a blending treatment that unites them with the principal walnut or mahogany case veneer. Satinwood is a favorite, as always, finished very light with a slight golden tint. Maple, in birdseye, curly and blister figures, is more popular than ever, and is cleverly blended with mahogany drawer fronts, dividers and trimmings. Rosewood and tulipwood are fin-

ished either natural or lightly stained and shaded. Decoration includes hand painting or marquetry, or close imitations with transfers. Vein lines, where found, are in green, gray, light blue or red.

Bed Room

The manner in which shading has served to unify and blend together diverse woods on the same piece, is illustrated by a dresser, the lower drawers of which are butt walnut with fancy center overlay of satinwood, frame of gum, and two upper drawers of curly maple divided by a square of mahogany. All but the walnut and gum were stained and shellaced, the remainder then being stained, wash-coated, and filled. Then, with a warm-brown, spirit shading-stain applied to all veneers, they are brought together into a delicate, unified whole, after which lacquer or varnish coats complete the finish.

Other outstanding suites included one in a walnut finish with ash panels stained a golden brown, filled natural and shaded to blend together; another in crotch mahogany, finished very light, almost natural; and yet another in crotch walnut, finished a rich medium brown. One bedstead showed a walnut, pencil-stripe, sunburst effect, so shaded on the edge of each rib as to give a rounded appearance to the segments. Redwood burl overlays distinguished another suite in a similar veneer pattern.

Painted suites run to light and dark greens, and soft grays, with subdued shading decorated with fioral t r a n s f e r s, hand-painted placques and stippled overlays. One especially beautiful set was parchment gray, hand decorated in blue Venetian, rococo garlands and lattice work, the whole softly clouded in a darker shade of gray. Another showed a combination of gray-green body color with natural maple top drawers, overlays and frame work.

Dining Room

Carried over from the summer show are china cabinets in Chinese red or dark green, plain or crackled, and with floral or Oriental decorations both flat and raised. However, in the stained cabinets, the very light overlays have given way very largely to deeper-toned recessed veneers, crotch mahogany or burl walnut. Legs show fewer bulb turnings; the Queen Anne cabriole leg is coming back into favor. Marquetry is popular on brown-mahogany overlays, shaded to emphasize the decoration.

A notable walnut suite showed an elaborated form of vein lining terminating in a floral effect with leaves diverging here and there from the vein. The scratch line was colored with gold bronze, the leaves and flower were stained darker to produce a two-tone marquetry effect. A number of suites show colored banding on leg turnings, shaded so as to be almost imperceptible from the walnut. In color tone the pieces seem to vary with the bulk—the larger the piece the deeper the stain tone and vice versa.

Living Room

Here the vogue for Spanish is being caught up with and desks, humidors and similar novelties are strongly Renaissance in design and decoration. Chinese red, green and black are favorites in painted colors, with oriental or bird decorations. A nest of three tables shows one each red, blue

and black, each with a distinctive raised Chinese decoration. Tilt-top tables are more than ever pictorial, ranging from ships at sea to enormous floral groups. Happily, the shading, which had gone wild in this field, has been subdued, and interiors of cabinets are painted in pleasantly contrasted colors. Much the same is true of crackle, spattering, stippling, etc.

In the upholstered lines, not much is notable except a tendency toward lighter-colored frames. One of light shaded maple stands out in a large group of sombre walnuts and mahoganies. Painted frames run to black, dark green, blue and red, shaded and striped. Walnut frames are highlighted on carvings, and mahoganies are deeply shaded in recesses.

Among the novelties, is a living-room table which, when opened up sideways, brings up a folding center leaf that makes it an ample dining-room table. Another handsome side table pulls out into a sturdy, extra single bed. Radio cabinets disguise their real purpose more than ever and range from the humble, earlier, two-tone walnut to period styles of the utmost magnificence in decoration. Mahogany appears in increasing evidence for this specialty.

Breakfast Room

The increased demand for breakfast-room furniture of quality is noted in the greater number of shaded maple, walnut, and even mahogany suites in period designs. A novelty in the medium grades consists of transparent lacquer enamel finishes, shaded, striped and decorated by stencil or transfer. In the painted designs, colors run darker and there is considerable combining of paint with stain. The earlier Chinese reds and greens have given way to parchment, deep blue and gold, black and stippled amber—all more delicately shaded than heretofore.

Cedar Chests

Here, the period tendency in design has brought the cedar chest to a point where it is practically a living room piece. Spanish, Queen Anne and American Colonial predominate, with occasional polychrome walnut and Oriental lacquering over a crackled background. One noted line in beautiful walnut veneers turns out to be artificially grained in butt, over-filled poplar. It is scarcely distinguishable from the genuine article, even by an expert.

Wicker and Outdoor

Fiber reed furniture, so long dependent on frosting for its decoration, has turned to more subdued colorings as a background for bright "spot" patterns, large and small. For the first time, shading has invaded this field in combination with stippling on flat table tops. Green and ivory form a happy color combination noted, and bronze finishes are increasingly in evidence. As an example of the universal spread of shading, a slat-back porch set was shown in a tan color, shaded a dark brown.

Kitchen Cabinets

Featured in this line, if you please, are "period" cabinets. One beauty, labeled "Spanish," shows a deep-yellow, enamel body-color with red-lozenge, stencil pattern and red glass knobs to match. Another, called Colonial, is cream colored with a brown

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FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

SUN VARNISH CO.

Louisville, Ky.

stencil pattern on the panels and lavender glass knobs on the drawers. At the last show, a frosted-oak stenciled cabinet was considered a novelty; at this one we see a gray-frosted oak refrigerator.

Metal Furniture

Not to be outstripped in decorativeness, the metal bed lines feature two and three-tone veneer effects in butt and stripe walnut, blister maple, and gold bronze or ebony vein lines. More enamel is seen than heretofore, notably green and shaded parchment with marquetry decoration, shaded and striped tan, Chinese red, green and black with stippled "overlays" and fluted legs, gold bronzed.

Harbisons Go To Europe

Mr. Ralph W. Harbison, President of the Pittsburgh Lacquer and Chemical Co., Pittsburgh, Pa., accompanied by Mrs. Harbison and his son Fred, sailed from New York on the Majestic, January 28th, for a trip which will take him to Paris, St. Moritz, Venice, Triste, Naples, Rome, Florence, Pisa, Geneva, Nice and Cairo, Egypt.

International Chemical Co.'s Sales Engineers Meet in Chicago

On January 2 and 3, 1927, all the sales engineers of the International Chemical Co. from throughout the middle west gathered in Chicago for a regular semi-annual conference.

This conference, as are all others, was to a large extent merely a clearing house of technical information. The first day was spent entirely on the discussion of the technical aspects of industrial cleaning. Considerable time was devoted to the use of the new International Compound No. 368-C, which has been newly developed after years of research. This product seems to be the long sought "foolproof cleaning medium." Discussion on this item was led by Mr. L. H. E. Armour and Mr. H. J. Butler. Mr. R. W. Armour led the discussion on the many special problems encountered in plants throughout the middle west.

Mr. C. W. Morris gave a very interesting talk on lacquering.

The second day was spent entirely on the manipulation of water-soluble, drawing, stamping, and cutting compounds, and on the newly-developed soluble oil. Discussion on this was led by Mr. D. J. Benoliel and Mr. H. E. Armour, Jr.

It is by frequent conferences of this kind that the International Chemical Co. is able to keep its field engineers thoroughly informed on the technical side of cleaning and lubricating, throughout the United States.

Biax Furnishes New Rubbing-Machine Heads

Since the first of September, the Biax Flexible Shaft Co. has exchanged the working heads on all units previously purchased, for new heads of the latest type. This new working head is one quarter of a pound lighter, thereby reducing the weight to exactly one pound. The internal workings are different and improved. The exchanging of these working heads was without charge to the purchaser, and, as the company defines it, it was "Pure Service."

This rubbing down and polishing unit is by no means the extent of the types of units manufactured by this company. There are close to 30 different kinds available.

Sargent-Gerke Representatives Meet in Indianapolis

Fifteen sales representatives of The Sargent-Gerke Co. gathered at the company's office in Indianapolis and considered sales plans that were described. A complete exhibit of the company's products were shown on finished articles, which included such items as dining-room furniture, finished in satin and gloss lacquer, kitchen cabinets finished in enamel and undercoat, glass novelties finished in lacquer, fiber furniture, clothes hampers, flower baskets, bird cages, breakfast-room furniture, hospital and dental furniture, and many other items too numerous to mention.

Mr. F. J. Leibold, in charge of the section of Industrial Sales, gave the representatives a minute description of all the different items and gave complete instructions in regard to their use.

——and Five Gold Fences Around it!

Our lacquers are not patent medicine"cure-alls". They won't give you the world with five gold fences strung around it. Unusual though they are, they can't do the impossible. Nor is it our policy to promise anything and everything.

Rockford Varnish Company lacquers are high grade products, capable of producing high grade results. They will do all that any lacquer can do—and more than most of them are actually capable of doing. They are worthy of your careful investigation. That they are selling well is due to their own inherent merit, not to superlative language.

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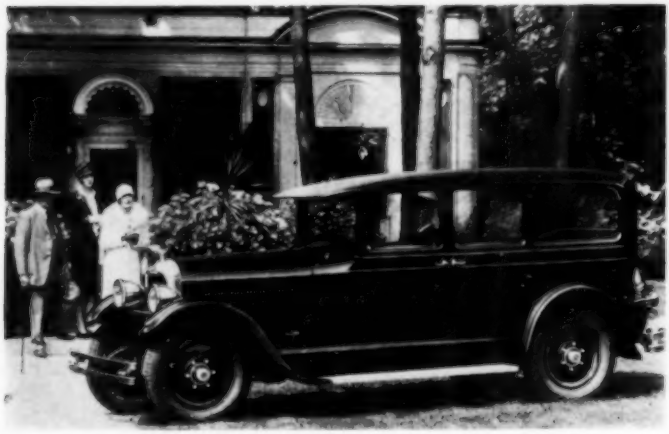


The President—A Studebaker Big 6 Custom Sedan—Seven passengers.

Motor Car Finishes at N. Y. Show

Notes on finishes and color schemes of the 1927 models, exhibited at the 27th Annual Automobile Show in New York City, January 8th to 15th

By George D. Hirst, Inc.

THE classic art of early Greece and Rome found rejuvenation in the colorful models on exhibition at the National Automobile Show held in the Grand Central Palace, January 8th to 15th. That this is truly an age of color cannot be doubted, when we consider the history of the automobile from the early days of its inception. From a mere mechanical contrivance without a single claim to beauty, it has become a mile-consuming creature, uniting all civilization with flashing color and fleeting wheels.

With mechanical perfection already assured, it is only natural that increasing attention should be paid the more physical details of design and color, which are so much the trend now, when color in the decoration of the home, and in dress, is all important.

The unusual number of different and beautiful color combinations at the New York Show conceded too, the influence of the buying power of the feminine element, for Milady has always been considered the most competent judge of the aesthetic qualities of a motor car.

Many Designs Shown

A generous selection of designs, from which to choose, was especially noticeable among the smaller cars shown. Interior decorations of good quality, coupled with attractive outward appear-

ULTRA-VIOLET RAYS

Tell the Story!

Marietta Oil Stains *vs.* Ordinary Stains

Within the last few weeks a large maker of tables told us that the stain on his table legs faded badly. He was using an ordinary oil stain. It not only faded, but they could not use lacquer or Varnitro over it, as it bled through the coatings. Marietta Oil Stain overcame all the troubles. ***Under the testing lamp our stain became deeper and richer.***

THE ONLY STAINS
(outside of water)
YOU CAN USE UNDER VARNITRO OR LACQUERS
THEY WILL NOT BLEED THROUGH
THEY COST NO MORE

WE ALSO OFFER
Unusual Highlighting Stains
THEY STAND THE LIGHT

THE MARIETTA PAINT & COLOR COMPANY

Executive Office and Factory: Marietta, Ohio
Southern Factory: High Point, N. C.

We would be interested in an improved oil stain if it will stand the light and not bleed..... We are interested in a good Shading Stain..... We manufacture.....

Name.....

Address.....

Feb. I. F.

ances, fully justified the desire of the manufacturer to conscientiously give his patrons "dollar for dollar" value. This same improvement was evident among the larger cars also—custom bodies allowing an even more complete harmony of inside and outside appearance.

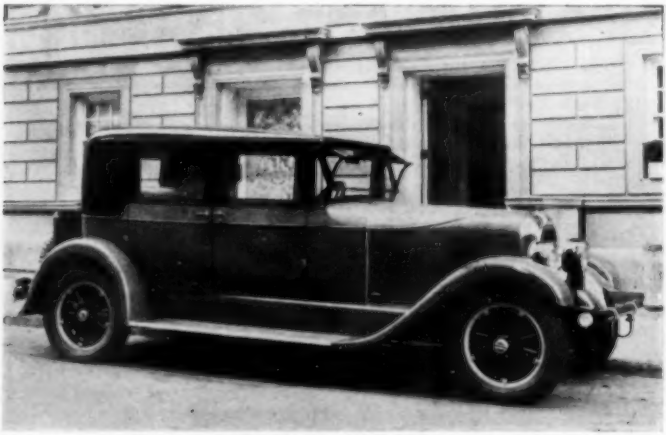
Buick, as always, was represented by models which combined its usual good lines greatly improved, with a variety of seductive color schemes. The Paris designers had been consulted by Buick engineers for the color combinations on all of their exhibits, and the results were gratifying. The No. 29 model, with its body of Yorktown green up to the windows and the upper part in Delaware green, attracted considerable attention.

Other combinations offered were Colonial blue, Paul Revere green and courier cream. The new Buick five-passenger coupe, in Colonial blue with an ivory stripe, brooked but little competition with other cars in its class.

The Jordan convertible "Playboy," in a canary yellow, drew favorable comment among the lower-priced exhibits. The five-passenger sedan in a two-tone blue and gray, together with the four-passenger Salon job in dark green with a gold center stripe, elicited a great deal of interest.

An interesting Hudson display consisted of two seven-passenger sedans, but the similarity in models was hardly apparent to the casual observer, whose color sense might have taken precedence over an eye for mere lines. One in a rich maroon and the other in Nipponese blue seemed, merely because of the contrasting paint jobs, two distinctly different models. New streamline bodies with lower chasses and smaller wheels characterized both the Hudson and Essex.

Ford, too, has felt the influence of this new vogue in colors and each year the models are taking on additional dignity, both in line



An Auburn Sport Sedan.

ARE you securing satisfactory results with the wood lacquer you are using? Can you use it as received without special handling? Does the finish produced enhance the beauty of your furniture design? You should be able to answer "yes" to these questions.

Vitraloid Wood Lacquer No. 2546

Vitraloid Wood Lacquer No. 2546 is a true nitrocellulose product, and can be used directly over stain or filler without bleeding or softening the undercoats. Its good body, quick drying, print resistance, and the fact that it is ready to spray, all contribute to its adaptability to any wood finishing schedule. And it costs no more than a good rubbing varnish. The experience of manufacturers who are using this wood lacquer has established its reputation as a superfine finish.

We should like very much to send you a generous no-charge sample of Vitraloid Wood Lacquer No. 2546. Write today for a testing quantity, together with prices and complete information.

PRATT & LAMBERT-INC.

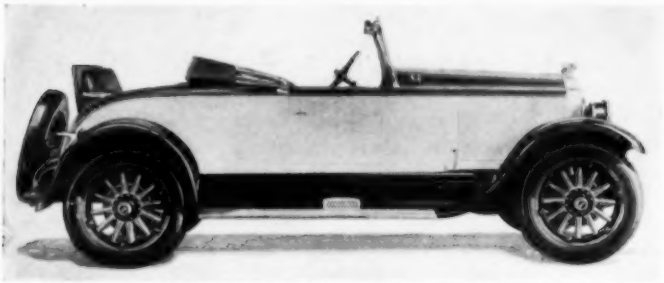
Manufacturers of

VARNISHES ENAMELS LACQUERS

84 Tonawanda St., Buffalo, N. Y.

New York Buffalo Chicago San Francisco

Bridgeburg, Ontario



A Buick open model with natural finished wood wheels striped to match body colors.

and color. The Show exhibits proved conclusively the axiom that, as surely as clothes help to make the man, so color makes the appearance of a motor car. The latest Ford model, with its pyroxylin lacquer finish, approximates real beauty.

The 1927 Ford coupe can be had in three color schemes. Royal maroon with red stripings found favor over the fawn gray with tan stripings. Wire wheels of the predominating body notes, or a complementary shade of the striping colors, may be had if desired, constituting in all a unique and artistic job.

Studebaker found representation in the happy choice of their President model which, in its finish of dark green and ebony black, was typical of the unobtrusive and conservative tastes befitting the executive. The big six Victoria, in a two-tone green and tan, and the standard six in blue and black, drew a host of admiring comments.

The exhibits of Dodge, Reo, Chrysler, Nash, Packard, Willys-Knight and various others assured us that a careful study had been devoted to the subject of ideas in motor car decoration, with most gratifying results. And to the intelligent application of these ideas was due much of the success enjoyed by manufacturers and exhibitors in the Show.

In conclusion, the statement of a prominent designer of automobiles aptly explains the reasons for this obvious trend toward more beautiful motor cars. "America is at last interested in beauty for beauty's sake. We are in for color in cars," he said, "not the riot of hues that years ago were satisfying, but an harmonious blending of shades, chosen for their relation to other colors, and the general harmonious effect as a whole."

Hobart Bros. New England Branch at Boston

The Hobart Bros. Co., of Troy, Ohio, announces Sales and Service Headquarters for the HB line of Air Compressors and Garage Equipment in New England, is located at 109 Brighton Ave. Allston Section, Boston, Mass., and is in charge of Mr. Fred L. Becker, who heads the HB organization in that district.

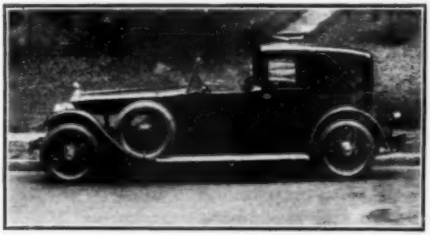
Not only is a complete stock carried for direct deliveries, but facilities for servicing HB equipment in use are unexcelled. Likewise, it is announced, this organization is equipped to give complete demonstrations, either at headquarters or in shops of prospective customers.

Quality
Beauty
Endurance

-three essentials that are paramount in

PE-CO-LAC
Pyroxylin Lacquers

available in the clear or a wide variety of color combinations



PE-CO-LAC is a *dependable* lacquer that saves time and eliminates cold cracks and checks. Liberal sample on request.

PECORA PAINT COMPANY

3rd. & Sedgley Streets

Philadelphia, Pa.

Established 1862 by Smith Bowen

Incorporated 1911

Another Victory for Spray Finishing

Finishing Spools and Bobbins

Revealing how the spray system of finishing came to be adopted in the spool and bobbin industry, and explaining details of various tumbled finishes for these hardwood products

By A. J. Daniels

SPRAYING GUNS, operated by compressed air, have invaded the last industrial stronghold of the hand wielded brush. Bobbin and spool manufacturers, among the last to fall in line, have finally capitulated to the argument of economy and efficiency, and now finishing departments in the bobbin and spool factories throughout the country are getting away from the old-fashioned "splash and wipe off" method of finishing these textile accessories.

It took a long time for the spray machine men to prove the advantages of their methods. To begin with, finishing departments in even the largest bobbin and spool shops are little more than three or four-man paint rooms. Often the boss finisher is boss only by virtue of getting a little more money in his pay envelope; he usually swings a brush or wields a spray gun himself. So, when the spray machine men converted these working finishers to the new methods they had to prove their arguments. Often they even had to demonstrate, to make the proof certain.

Requirements of Finish

There is little latitude in finishing spools and bobbins. The primary requisite on either is a finish that is tough, smooth to the extent of being slippery, and absolutely proof against grooving or slivering. The last qualification eliminates many varnishes, and if it did not, the necessity of a cheap, quick-drying, easily-applied coating would put a varnish of quality out of the running.

Shellac, imitation shellac, and lately lacquers are the finishes tried by time and found by the bobbin makers to fill the bill perfectly. Lacquers have only lately made any headway, chiefly because of the difficulty the older finishers (trained only on bobbin finishing) had in adapting themselves to the tough, durable finish. But necessity and competition have driven even the old-timers to the use of lacquers in finishing "Jack spools" and the better kinds of yarn cones and reels.

Hardwood Bobbins

Every cotton yarn or thread bobbin produced in this country today is made of hardwood. This fact simplifies the problem of finishing considerably. In the G. M. Parks Brothers bobbin factory in Winchendon, Mass., a time-tested method of finishing the complete line of bobbins, spools and reels has been developed over a period of 30 years. Here an old time finisher is in charge of operations, and the manner in which he utilizes a force of four women and two men is a revelation in the ways of finishing small wooden articles.

!

The most unique and distinctive finish offered the furniture trade during the past year was BREVOKRAK—and 1927 will be another BREVOKRAK year.

Pioneered as a leatherette finish for radio horns, its variety of attractive combinations has brought it into use for many other articles such as, radio cabinets, furniture, fixtures, novelties, toys, etc. Ease of application—uniformity of pattern—combinations to suit your particular requirements, are outstanding qualities of BREVOKRAK.

Thorough-going demonstration made at your plant if desired.

!

WAUKEGAN CHEMICAL COMPANY

"Values That Endure"

WAUKEGAN, - ILLINOIS

Northwestern Representative
CASPER LABORATORIES
611 Ryan Bldg., St. Paul, Minn.

Bobbins come to the finishing room turned smoothly and sanded on the lathes. The finishing room itself is dust tight—an unusual feature in a bobbin factory. The bobbins are dropped into big baskets as they leave the cutting knife on the lathe. On the way from the lathe to the finishing room there is a compressed air line connection where a boy runs the basket onto a stand. The nozzle of an air gun is poked through the holes in the basket and all dust and shavings are thoroughly blown out.

Racking and Spraying

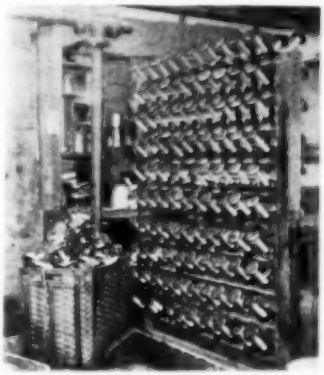
In the finishing room the bobbins are placed on racks which hold 400 each. These racks are simply big frames with holders made of metal set into notches. Holders made of steel are easy to clean; they are simply taken outside once a week, placed on a pile and touched with a match. The paint or shellac burns off in short order; then, after a benzine bath, the holders are ready for another week of service.

When a rack is filled with bobbins it is wheeled to the spraying booth where the operator quickly shoots a fish-tail spray first across the rack, line by line, and then up and down in the same manner. The rack is then turned around and, working from the other side, the operator repeats the process. The chief requisite is speed, as either imitation shellac or lacquer is always the material used, and no time can be wasted, or a "set" may take place prematurely.

To make it work properly, shellac or imitation shellac must be reduced a great deal. Finishing on almost polished hardwood, even very thin material will give an excellent finish. The danger is not so much in thinning too much, but in attempting to run either medium to thick. The same is true of lacquers, although considerable experimenting sometimes has to be done to obtain the right fluidity with this medium. On ordinary bobbins clear shellac or clear lacquer is used, as most cotton yarns are wound on the bobbins before being dyed, and any danger of coloring the yarn is thereby eliminated.

Jack Spools and Reels

Jack spools and reels go through practically the same process. However, the cores of the spools are never painted or



A basket and rack "loaded" with the spools.

shellaced. On most kinds of jack spools the heads—that is the big circular ends—are painted before being attached to the cores. Formerly this was done by hand, but improved methods and simplification of racks has changed the process. Now most spool ends are painted with the spray gun.

Some spools are ordered with colored ends, usually with either

WE ARE NOW *COMBINING* A VARNISH *and* LACQUER

We have had many suggestions from superintendents and finishing foremen that too much importance is attached to the extreme speed of Lacquer finishing, to the detriment of other desirable qualities. The greatest point of criticism of the average present day furniture lacquer is that it is impossible to get building without brittleness and that these lacquers set too quickly.

As a result, we have developed No. 88 Lacquer.

No. 88 Lacquer can be truly termed a varnish lacquer. It should be coated twice a day and one full day allowed before rubbing to give best results. Its performance may be compared with that of a very quick-drying varnish, except that such a varnish would be very brittle, while No. 88 is tough.

It builds and levels as the varnish would and rubs twice as easily.

May we send you a trial order?

Murphy KAURIOL NUMBER 88 Lacquer

MURPHY VARNISH COMPANY

NEWARK · CHICAGO · SAN FRANCISCO · MONTREAL

black or red heads. Paints of every kind have been tried, but the materials used almost everywhere now are common lampblack and ground red ochre. Lampblack is simply stirred into the imitation shellac and mixed so as to be free from lumps. The same process is used with ochre.

Tumbled Wax Finish

On spooling reels and on warp spools, no finish has ever been found as satisfactory to the manufacturer as a waxed surface. To obtain this finish huge tumblers are used. The best tumbler in use at the Parks factory has a capacity of about 400 jack spools. It consists essentially of half of an ordinary steam boiler placed on an arbor and turned at the rate of about 45-r.p.m. by means of a belt.

The tumbler is filled with spools to within six inches of capacity. This filling of the tumbler so near to capacity is necessary to prevent the spools from falling too great a distance during the tumbling. Just room enough to allow the spools to turn two or three times to every revolution of the tumbler, is the ideal load.

To every 4000 spools a 6-lb. cake of ordinary wax is allowed. The cake is broken into sections of about 2-in. square. These pieces are thrown on top of the spools and they quickly find their way to the outside edges. The tumbler is tightly closed and is kept revolving for four hours. Long experience has taught the finishers that to do a thorough job, this length of time is necessary. Too much wax makes the spools sticky, and too little leaves bare spots; either condition is undesirable.

Rosin and Oil Finish

Another cheap finish on small bobbins is obtained by using the tumbler with different materials. To a tumbler full of small bobbins (perhaps 12,000) the finishers add 4-lbs. of powdered rosin and a quart of linseed oil. The tumbler is revolved for from two to five hours and the resulting finish is a smooth, even, slick surface, although it lacks a sheen of any kind. In both tumbling operations, if the tumbler is filled to the proper capacity, the rolling and rubbing together produces an even smoother finish than that which appears on the shellaced articles.

The current depression in the textile business has made the lot of the bobbin manufacturer a hard one. Competition has always been keen but never has the cotton manufacturer been so hard to sell as today. Bobbin makers have found that quality as well as low price counts in a selling argument now. Most of the bobbins and spools are made of the same materials, so the makers have only one quality point to stress, namely, "finish." When the spray people were able to demonstrate the superior finish obtainable by spraying, the bobbin makers decided at last to adopt modern methods. Brush wielders, accordingly, were forced into the discard.

More than 90 percent of the automobiles being produced today are finished with nitro-cellulose or pyroxylin lacquers.

When white is added to a bright, pure color like Prussian blue, for instance, you produce a tint. When black is added you produce a shade.

LUXOR

INDUSTRIAL FINISHES

LUXOR
Satin Lacquer

Does Not Settle

Produces the highest type rubbed effect on both flat and turned surfaces.

Reduces rubbing costs from 50% to 75%

A generous trial sample sent on request.

The services of our finishing experts are at your disposal.

The Sargent-Gerke Co

Producers of

Lacquers, Enamels and Undercoats

INDIANAPOLIS, IND.

The Secret of
Master Salesmanship

Selling; Demonstrating; Failing—II

Another production man is prompted to tell, voluntarily, some of his experiences and opinions on the above subject, which caused so much comment after its publication in December issue

By D. A. Hampson

IN THE December issue of INDUSTRIAL FINISHING, "a Superintendent of Finishing" tells of an experience he had with a certain "sales engineer." Hundreds of superintendents have, by this time, read and approved of that article and every one of them has felt better after reading it, because he has probably been up against the same kind of annoyance. This appendix to the original article is being written because I believe the same superintendents will approve of it, too, and because the scores of manufacturers who advertise in INDUSTRIAL FINISHING may profit by it, as well as by the other.

High - pressure salesmanship may make a big showing on the books for a time, but it is very costly and it positively does not make the lasting friendships that more rational methods do. Overselling is easily as bad a fault as sending out inferior products, be they varnishes or sewing machines. There is bound to be a reaction every time the buyer purchases materials that he doesn't need or doesn't want, and that reaction is never a favorable one for the salesman who "crammed the stuff down the buyer's throat."

Who Are Welcome

This writer was once associated with a salesman, now dead, who made more friends for his firm than any other of the dozen men in their employ. Although his territory was regularly covered by salesmen of several rival firms, it was the usual thing to find buyers who were saving orders for this one man—and many of the orders were saved for six months. That's salesmanship.

This salesman's secret as he often said, was "never sell a customer what he doesn't need or doesn't want." Very simple, indeed. And he could go into the plant for a demonstration of his own wares, or assist them with a knotty problem of their own, for he was a practical man. Today, he would be called a "sales engineer."

Men like that are welcome visitors. The owner or the buyer is glad to see him come in. The superintendent of finishing is perfectly willing to drop that experiment on a ticklish enameling job, to talk things over with a sympathetic soul. Result: sales resistance is reduced to a mere nothing.

Who Are Unwelcome

On the other hand, in come these young fellows with something that will "cut your costs in half and improve your product 100 percent." You can spot them afar off and inwardly you rebel at the thought of being decently polite to them, or of being interrupted by them when you are

FOR METAL, WOOD, COMPOSITION, REED, ETC.

Armitage ARMORLAC LACQUER SYSTEM

A DEPENDABLE lacquer system of finishing, backed by one of the oldest paint and lacquer manufacturers in the United States.

With a background of mature experience in the development of lacquers, we number many leading industrial concerns as users of ARMORLAC, among them several well-known car manufacturers in the medium priced field.

To those who feel the urge to conquer new fields through improvement of their products, we have an interesting story to tell—of ARMORLAC, its everlasting dependability, lustrous beauty, yet on a cost basis comparable with varnish finishing.

Just give full details of your products when writing us.

JOHN L. ARMITAGE & CO.
Established 1876
Newark, New Jersey

MANUFACTURERS SINCE 1876

Kindly mention INDUSTRIAL FINISHING when writing advertisers

busy, especially if there is nothing you want to buy at the time. They all have the same line of talk about their stuff being so much better than the other fellow's, and how much quicker you can run your work through if you use it.

Now, this writer is like the other superintendents in his admiring loyalty and enthusiasm for a salesman, but when you only have an order to place, say once a month, and you know what is giving you satisfactory results under your own conditions, you very naturally resent having a man come along about once a day who wants to take an hour of your valuable time to listen to his bally-hoo which is, of necessity, based upon generalities. You finally get to the stage where you shut them all off with a, "leave me your prices and I will look them over when I get time."

The Men Who Know

It may not be the fault of the salesmen at all—it may be the fault of high-pressure sales managers—but wherever the fault lies, it is high time for those persons to learn one fact, namely, that a majority of finishing executives have reached the stage where they buy or influence the buying because they have worked long enough and hard enough at the line of work to master it fairly well. These same men read the trade papers, they talk with other executives, they go to conventions, and they are overcoming problems of their own all the time.

They know how finishes must be applied in their own plant, with their own equipment and with their own class of help. That is "practice," and it is absurd, yes, silly, to send out a salesman or "engineer" who is long on theory alone. We owe a great deal to the man of theory who has so revolutionized the industrial sphere, but his discoveries have to be used in "practice," which makes it folly to send out an uninformed man to talk to practical men of experience.

Not all of these welcome salesmen are young men—and the writer hesitates to think that he isn't as young as any of them. Of the salesmen who have been calling on me, the two who stand out as best are at the extremes; one is recently out of college and the other was past seventy at the time of his death.

When the latter died a few months ago, his firm received over 400 letters of respect. Needless to say that when 400 busy men take time to write of a salesman, that man was a welcome visitor—and as a matter of fact, he got about all the business that 400 concerns had in his line.

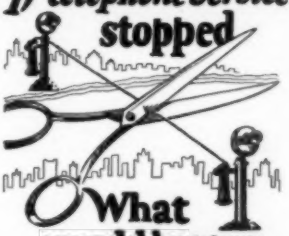
But of the young man, we have never bought. His products are slightly out of our line and he is smart enough to see it practically and to tell us (what we didn't know) chemically why we cannot use them to advantage. But he keeps coming and some day we will be customers of his.

Testing Stains for Use Under Lacquer

In conducting an investigation in our laboratory on various types of water soluble stains, we have learned a fact which may be of interest to readers of INDUSTRIAL FINISHING.

We find that some of the so-called, water-soluble dyes, which are recommended for use under

If telephone Service stopped



What would happen to business?

NEW YORK is now telephoning to London. Business, with the aid of the telephone is traveling a fast pace. Cut the wires and you will kill the pace. Then it's only a matter of a few years before business would be back on a Civil War basis.

When a firm refuses to listen to new ideas—declines new suggestions—turns down proposed demonstrations—they're cutting their life lines, or at least severing several strands.

Many a new thought, capable of increasing a product's sale lies just around the corner.

ALAKA reacts as a tonic for the increased sale's pep of products—it has for many products.

Send for a free booklet called "Finishing Facts"

ALAKA *The Practical Lacquer*

LACQUER & CHEMICAL CORPORATION

214-224 Fortieth Street, Brooklyn, New York

lacquer, have a tendency to bleed under lacquer. This is due to the fact that some water soluble dyes are also soluble in alcohol, and also soluble in some of the solvents that go to make up the lacquers and the thinners.

Generally, the water-soluble stains are taken from the acid group of aniline dyes. These are supposed to be soluble in water only. A series of several hundred tests in our laboratory, however, has proved that certain reds, greens, blues and yellows of the acid group are soluble in alcohol, lacquer and thinner to a very high degree. Such colors, if used as stains, will have a tendency to bleed through shellac and spirit varnish, as well as lacquers.

We might suggest to those who use water stains under lacquer, that they make this test: Add one half ounce of color to a pint of lacquer or shellac and permit same to stand for 24 hours. After 24 hours, agitate and note results. If the stain is a true water stain, the lacquer or shellac will remain uncolored.—Pylam Products Co.

Du Pont Sectional Meetings; Sales Force Increased

The Paint and Varnish Division of E. I. du Pont de Nemours & Co. is holding a series of sectional sales meetings in various parts of the country. These sectional sales meetings are taking the place this year of the large mid-winter conventions. It was thought advisable to hold these sectional meetings as the result of the growth of the sales organization of the company.

Meetings have been held in Minneapolis, Chicago, Philadelphia, Columbus, Indianapolis, Kansas City, Atlanta, Dallas, Boston and Syracuse.

The important message being delivered to the sales force is that there has been an increase of approximately 90 percent in the sales of the division, which includes paint, varnish and brush Duco. Brush Duco has now obtained practically complete national distribution in towns of more than 1000 population, where there are any retail outlets. The advertising campaign for 1927 is the largest ever used by the Paint and Varnish Division. The Trade Sales organization has been increased nearly 100 percent.

The programs at the meetings already held included talks by J. W. Elms, Division Manager of the Paint and Varnish Division, who reviewed the progress during the year and stated what had been accomplished in the extension of the market for Duco for brush application; W. M. Zintl, Director of Sales, who outlined the sales plans for the year; William A. Hart, Director of Advertising of the du Pont Co., who presented the 1927 advertising program including a large national campaign on paints, varnishes and Duco, metropolitan newspaper advertising in New York, Chicago, Pittsburgh, Boston and other cities, and new display and sales helps for retail dealers. Talks were also given by G. A. Biesecker and B. A. Wilson, Sales Managers.

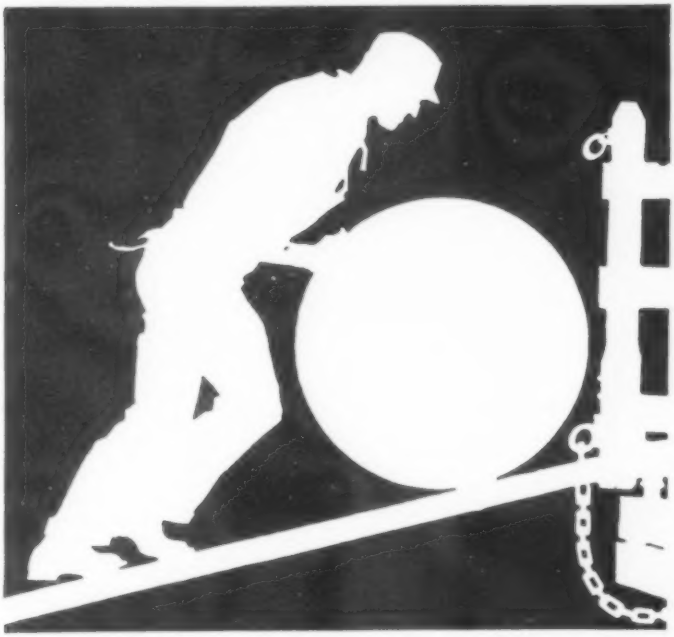
Pecora Stockholders Hold Annual Meeting

At the Annual Meeting of the stockholders of the Pecora Paint Co., held in its offices at 4th and Sedgley Ave., Philadelphia, Pa., on Tuesday, January 17th, Mr. S. B. Bowen, Sr., resigned as President of the company, and was made Chairman of the Board of Directors. Mr. Bowen has been actively connected with the company for the past 54 years, and its president for the past 15 years. The company has been in existence for 65 years, having been founded in 1862 by Smith Bowen.

Two new Directors were elected to the Board, Mr. Laurance Bowen, and Mr. Frank G. Pate.

The new Board of Directors elected the following officers for 1927: Mr. S. B. Bowen, Jr., President; Mr. Laurance Bowen, Vice-President; Mr. J. H. Johnson, Secretary, and Mr. J. J. Schisselbauer, Treasurer.

In the evening the Stockholders attended the Annual Banquet held at the Pelham Club in Germantown, Phila., Pa. The banquet was followed by a comedy in three acts, giving a parody on the activities of the different stockholders shown in miniature.



The Drum That Can't Be Beat

Filled to the brim with Glidden Finishes—produced to meet your individual requirements—this is the drum that gives you an ***unbeatable*** finishing result at an ***unbeatable*** finishing cost.

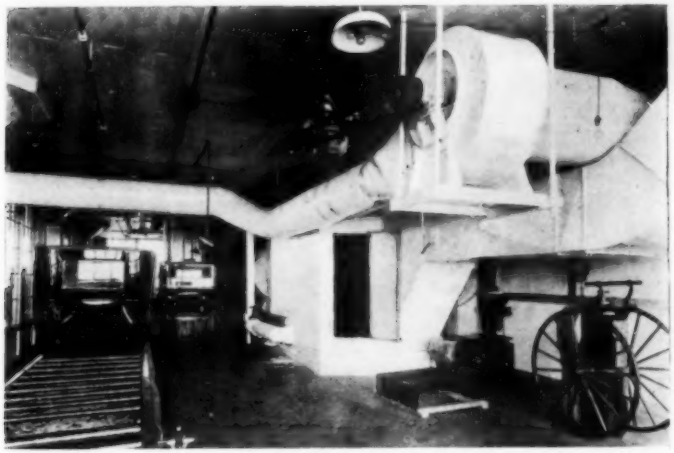
Glidden men are prepared to make a thorough study of your finishing needs, offer practical suggestions for your finishing systems and supply you with the right materials to carry them out.

THE GLIDDEN COMPANY *National Headquarters* CLEVELAND, OHIO

GLIDDEN
INDUSTRIAL
Laco

COMBINES all the desirable qualities of Varnish and Lacquer . . . Varnish depth—lacquer speed—varnish cost . . . Dries with perfect duplication of rubbed effect . . . Sets up fast, picking up no dust or dirt.

Jones-Dabney Company Inc.
Louisville, Ky.



An installation of air filters, cleaning the air for the finishing and drying rooms in a large automobile manufacturing plant.

Provides Clean Air for Finishers

Describing a system of air filtration and the equipment used to leach out all dirt, dust, soot, etc., from air entering finishing and drying rooms; also to catch surplus of wasted spray material

By F. W. Worthington

ATMOSPHERIC dirt has increased in such volume during the past few years, due to the greater congestion in retail and manufacturing districts and the more general use of soft coal, that supplying clean air for ventilation and industrial use has become a serious problem.

Soot in particular—the most destructive element in modern ventilation—has focused attention upon the inherent inefficiencies of several methods of air purification. Being a flaky, amorphous substance it quickly clogs up cloth screens, the finer particles working through into the ventilation system.

The need for a practical and economical method of removing dust, dirt and soot from air entering industrial buildings, led to the development of the Reed system of air filtration, which operates fundamentally on the same principle as the human nostril.

Operation of Filter

Air, in passing through the filter, impinges upon a permanent filter media (split wire mesh) coated with "adhesine"—a simple and inexpensive chemical developed especially for this

service. The dust and dirt are leached out and deposited on the filter body, being bound securely by the adhesive coating. As successive layers of dirt are deposited, additional adhesine is supplied by capillary action, being withdrawn from the minute drops or reservoirs of the liquid held at the intersection of the media, and in this way binding and keeping the entire system moist for long periods.

Exhaustive laboratory tests have shown that the first impingement of air on an adhesive coated surface removes approximately 60 percent of the dust content; the next impingement removes about the same percentage of the remainder and so on to infinity. It is apparent, therefore, that maximum efficiency in an air filter depends upon:

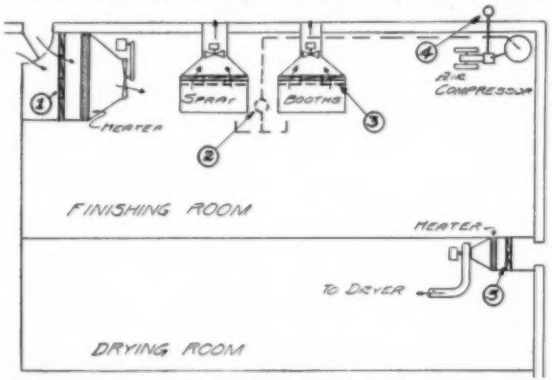
1—Securing the greatest possible number of impingements, and

2—An arrangement of the filtering media which insures dust-accumulating capacity, through the filter conforming to the dust-removal ratios of these impingements.

The air, in passing through the filter, is divided into innumerable fine streams which change in direction from 11 to 18 times, each change being caused by an impingement of the air upon the adhesive-coated filtering media.

To meet the second requirement for high efficiency, the density of the media is graduated throughout the depth of the filter. There are larger voids in the front section, where the bulkier part of the dust is removed, but the final cleaning occurs in that portion of the filter where the media is more closely packed.

This patented feature insures, for the filter, long continuous operation at a consistently low resistance. The air filter cell consists of a shallow metal case, packed with a filtering media of split wire, and has expanded metal covers, front and back, which hold the filtering media securely in place but allow free



Floor plan of finishing room and drying room completely equipped with air filters. *1*—Ventilating system with damper for regulating the amount of outside and recirculated air. *2*—Small filter in compressed-air pipe line to spray guns. *3*—Filters and louvres to control surplus paint spray. *4*—Small filter caps intake pipe to air compressor. *5*—Ventilating system for final drying room or oven. In many cases it is possible to combine Nos. *1* and *5* by using a duct to carry the air to the dryer.

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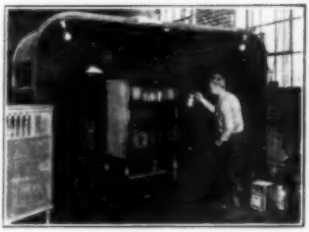

Mr. F. A. Swanson, Finishing Foreman, is shown putting the "selling finish" of Opex on one of his company's Burl Walnut cabinets. The finest pieces of furniture this company produces are finished with lustrous Opex.

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"A FINISH FOR EVERY PURPOSE"

passage to the air. A typical unit appears in Fig. 1.

Lead Coated Mesh

In the manufacture of this filter equipment, the filter cell is completely assembled and passed through a process by which the entire cell is immersed in a bath of molten lead alloy. By this process, each fiber of the filter media receives a protective, non-corrosive, lead coating and is bound securely to every other fiber it touches, forming a permanent and coherent mass. It then receives a heavy coat of black enamel and is oven baked.

Referring to Fig. 1, grasping the handles puts the thumbs in

Fig. 1—An air-filter unit equipped with automatic latches to hold the filter cell in its frame.

natural position to release the latches, when removing a cell for cleaning and charging. The air filter is equipped with a felt gasket seal between cell and frame, insuring at all times the full benefit of high efficiency in dust removal. This gasket is attached to the back flange of the frame and makes wiping contact with the cell, rather than compression contact. As a result the seal is not affected by continuous usage.

The air filter unit, as shown in Fig. 1, is composed of a filter cell and its frame, forming a complete filtering unit in itself. It is so designed that it can be quickly and easily attached to other units, thereby allowing ex-

Fig. 2—Air filter and box louvre for use in spray booth to control surplus paint spray.

pansion or enlargement to meet any requirements as to capacity or available space.

Cleaning the Filter

When dirty, the complete filter cell is removed from its frame and cleaned. The cleaning solution consists of a small amount of cleaning compound dissolved in a tank of hot water. This dope cuts the adhesine loose from the filter and with it the accumulated dirt. The clean filter cell is then "charged" by dipping it in the adhesine, after which it is again ready for service.

It is only necessary to clean the filters every four to 12 weeks, depending upon the amount of dust and dirt to be removed from the air. The actual time required for the entire operation is only a few minutes. This occasional

cleaning and charging is all the attention the air filter requires.

According to the manufacturer, the Reed Air Filter Co., of Louisville, Ky., this air filter is guaranteed to remove 97 per cent of the dust, dirt, soot and bacteria from the air passing through it. Numerous tests under actual operating conditions have shown a cleaning efficiency of better than 99 per cent, it is claimed.

Clean Finishing and Drying

The drying of such finishes as paint, enamel, varnish, etc., may be greatly accelerated by the proper ventilation of drying rooms or ovens. Bringing clean, fresh air in contact with the work and exhausting the fume-laden air serves to materially lessen the time required for drying, and in turn reduces the cost of this operation.

When forced ventilation is used, however, it is necessary to clean the air to prevent dust and dirt from entering the drying room and settling on wet finished surfaces. The only equipment needed is the required number of these filter units, a fan and the small amount of sheet-metal work to connect the filter to the fan.

Spray booths, equipped with exhaust fans to carry the surplus spray and fumes outside the building, sometimes present a problem due to the paint spray depositing on fan blades, clogging up ducts and creating an unsightly appearance by settling over the outsides of buildings and surrounding areas. By installing in these booths filters equipped with special louvres, as shown in Fig. 2, the excess spray can be filtered out of the air before it is exhausted. This is highly desirable in some manufacturing plants.

Nixon Nitration Works Offer Soluble Cotton

The Nixon Nitration Works, Nixon, N. J., nitrators for over a quarter of a century and devoting most of their time to Government supplies, have been perfecting during the past year, soluble cotton for the lacquer and solution trade, and are now offering a tried and tested product.

Worthington Pump Buys Harris Air Pump Co.

Announcement is made by the Worthington Pump and Machinery Corporation, of the purchase by it of the Harris Air Pump Co. of Indianapolis, for some years one of the foremost manufacturers of air-lift systems and air-lift pumps. The purchase was outright and includes patents, drawings, patterns and good will.

This new acquisition places Worthington in the front rank in the air-lift industry, as it permits the company to offer complete well equipment including compressors, produced in its own plants.

L. G. Miner Joins The Lindeman Wood-Finish Co.

Mr. Louis G. Miner, one of the oldest and best known lacquer manufacturers and salesman in the business, has joined The Lindeman Wood-Finish Co., of Indianapolis. Mr. Miner was one of the pioneers in the lacquer business, as he incorporated, operated and managed the New Era Luster Co. of New Haven, Conn., in the year 1897. This concern manufactured metal lacquers and pigmented-enamel lacquers.

Later he started with the E. I. du Pont Co., when they began to manufacture lacquer. He acted as traveling representative for that company for 12 years, six years of this time selling du Pont products in the states of New York and Pennsylvania. He spent 1½ years representing the company in the Grand Rapids district, selling wood lacquer to furniture manufacturers.

For the last two years Mr. Miner has been devoting his time to the development of lacquer finish for automobile and auto-body manufacturers. He will develop a line of lacquers for The Lindeman Wood-Finish Co. and will also represent this firm in Pennsylvania, New York and the New England States, carrying a full line including lacquers, stains and fillers for the Industrial Trade only.

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NITRO-VALSPAR
The Valentine Lacquer Finish

Expert Gold Leaf Gilding

Information about different types of sizing material for use under gold leaf; how, when and where to use it and how to apply gold leaf for various classes of commercial and industrial gilding

By A. F. Eibell

GILDING, as a branch of our trade, is a subject that receives but little attention in our journals, and believing that with the present styles in furniture this may be of interest, I am submitting what follows, without any allusion to the form of gilding referred to by our friend Mr. Hess in the October issue of INDUSTRIAL FINISHING.

Mr. Hess has covered the subject much as I was taught—as it applies to picture frame gilding—so I could add nothing to it. But even for the light French type chair that is occasionally done in gold leaf, this type of whiting and pipe clay work is too hard and brittle, and while there is no doubt that with water size and the use of the agate the best burnish can be secured, I believe that for general furniture purposes the quick size is best, for if properly handled it admits the application of a protective coating.

Using Sizes

For convenience, I will divide gilding into two classes, namely, "quick" and "slow" size. Quick size, as generally accepted, consists of a good grade of gold size japan, and when practical, it should be used straight from the can, although at times it may be necessary to add a little rubbing varnish or even finishing varnish, to slow it up; or a little color to allow the user to better see where he is applying it. This is especially the case on ornamental or line work. Perhaps occasionally a little turpentine may be added to make it work easier, but it is the right "tack" that counts.

The coat must be full and round and evenly distributed. Gold should not be applied until you can lightly press the tip of your finger to the sized surface without leaving an imprint.

Applying Gold Leaf

On most work of this type, gold is applied directly from the book. The leaf of the book is folded to width required, the finger nail is run over lightly on gold and then the book is pressed on sized work. Gold can also be taken up (after cutting with the finger nail) on a gilder's tip and applied to sized work. Or a gilding pad made of sheep skin may be used to lay one or more leaves of gold on, and with a long keen knife you may cut the gold to size wanted; then, with the gilder's tip, pick it up and apply to sized surface.

There is also a so-called "patent gold" which is attached to a wax paper; this enables a workman to handle the gold easier than from loose leaf books, but except for outside work, such as store fronts, showcases, etc., it is not very good. You do not get the burnish with this way of handling gold leaf.

Still another way of applying gold is to use the gilding wheel. This means of gilding is very popular in railroad shops where

You wouldn't open a can of tomatoes with a Stillson.....

Yet a Stillson is a good tool, *in its place*, for the work it was designed to do.

The same thing is true with paints and finishes. There are many good finishes, but quality alone is not sufficient. The finish must be *scientifically designed for the particular work it is to do.*

This matter is so important that the du Pont Company has put its Industrial Finishing Service at the disposal of all manufacturers. These trained finishing engineers are backed by the resources and experience of the du Pont technical and laboratory staff. They investigate each particular finishing job, and recommend a particular finish, and a proper finishing system—to fit that job.

For full data about the du Pont Industrial Finishing Service, and other information concerning the du Pont line, write to E. I. du Pont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J., Chicago, Ill., San Francisco, Calif., Everett, Mass., or Flint Paint and Varnish Limited, Toronto, Canada.

DU PONT

the lines are of only one or two widths; likewise the lettering is of a uniform size and style.

Gold for Lettering

On commercial body and bus lettering and striping the ribbon gold is popular. By taking a ¼ or ⅞-in. wheel, one in each hand, a skilled workman can do as much gilding on the average striping and lettering job in two hours, as he could in a day, off of the book. Since this work is all done with quick size and afterwards varnished, he can let his size get to just the right point before applying gold leaf, as pressure of the wheel helps him, so the risk of tearing up gold either under brush or spray is greatly reduced.

Occasionally the so-called "slow size" (fat oil) is used in every branch of the painting trade; it is popular in sign painting shops, and for outside signs it cannot be replaced. I remember a sign that was done when I was an apprentice; it hung for more than 20 years at an address on Broadway, in New York, and when taken down the gold was in good condition, while the background of paint, etc., was gone.

This same brand of fat-oil size is still on the market and is still accepted as a recognized standard for 24 to 48 hours gilding. By the addition of gold-size japan, or any color, such as chrome yellow ground in japan and thinned with turpentine, this size can be made to work more quickly, but like all goods put out by dependable firms, it is made "right" to serve a certain purpose, and "doctoring" it up to make it adaptable for other uses is a questionable practice.

Sign Painter's Gilding

The sign painter does a class of gilding that differs from all other branches of the gilding trade, namely, glass work. If any of the various uses of gold can be classed as art, I believe this branch of work deserves that distinction. Roughly this work is divided into two classes—"second story," which is generally done with one gild and touch up, and "first story," which is usually gilded, burnished out close and double gilded, then washed with warm water to which some ether is added.

When this work is done right, no matter how large a field of gold is used, it should not show a lap, pin hole or other blemish, and it should have a perfect burnish. When I was learning my trade the last word in size for this work (as likewise for the whiting clay type of picture frame gilding) was Russian fish glue or gelatin, but today you can buy a ready prepared capsule that contains all necessary ingredients to make this size. It makes a size that equals any we ever made, and does away with all the boiling, straining, etc., that went with the old way.

In this branch, above all others, cleanliness is important—clean surface, clean materials and clean tools. Size is applied with a camel-hair brush in a flowing coat. Gold is cut on book with the finger nail, and applied to the size with a gilding tip. If the size is "right," when gold leaf on a tip is held within ¼-in. of the glass, the gold leaf should "jump" off the tip and onto the size.

Before the days of "Volstead," this could be easily managed by adding some pure grain alcohol to the sizing. This helped to attract the gold leaf and it acted as a preservative. However, the

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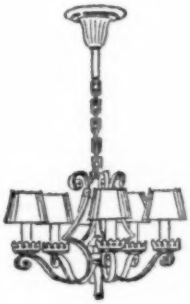

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size referred to will do the trick if used as directed. The object, of course, is to put the gold in place without letting the tip come in contact with the size—so as to always have a clean dry tip. It is well to have several tips for this work, and since they come in different length hairs, it is advisable to use one best suited to job at hand.

Monograms and Emblems

Decorators, working in distemper colors, use the yellow of an egg tempered with a few drops of glycerine. The more glycerine the slower the size dries. Sometimes on large fields, such as shields, etc., the design is given a coat of thin shellac to stop suction. Then the old fat-oil size is generally used, care being taken to not let size go quite to the edge of shellaced surface.

Quite often one is called upon to do a job of gilding on a newly varnished surface; perhaps it is a monogram or trade mark on a vehicle door. Naturally, gold leaf would stick to a surface not treated with whiting, but if a coat of the white of an egg is applied, or if the surface is lightly rubbed with the inside of a white potato, it will stop sticking; when the job is completed the surface can be washed and all traces of either method used may be removed.

Furniture Gilding

With present-day styles in furniture the decorator is coming into his own, so naturally we may expect to see more gold leaf used. Of course, gold bronze has its place in the general scheme of things too, except for lining or striping.

With so much open-grain work, our new friend lacquer makes an ideal preparatory coat for this type of gold leaf gilding. One or two thin coats will stop all absorption and so hold out the size. One coat will protect the gold leaf, and so the very objection to lacquer—that it doesn't body up so well—will be in its favor.

Do Not Skimp

Now if you will heed a "warning," don't use gold leaf too skimpily. Gild with a full lap and don't try to get the cheapest leaf on the market. There are standard manufacturers who make a quality product; patronize them. If you are going to gild on glass, get gold made and sold especially for that type of work. If you are going to gild outside, get a patent or storm gold, and the best of this kind; the same with loose gold or ribbon gold. Fifty cents or a dollar saved on a pack of 20 books, 500 leaves, in this more than many other things in the trade, is poor economy. The same applies to size. Given a fair chance, gold leaf will outwear any article used in our trade.

Attends Chicago Furniture Show

Mr. R. D. Pinkerton, Special Field Representative of The Marietta Paint & Color Co., has been attending the Chicago Furniture Show and will, before he returns, visit some of the trade in Wisconsin.

New Shellac and Wood Stain Plant

The Woodfinishing Products Co. of New York announces the completion of a new shellac and wood-stain plant at 434-36 Barretto St., New York City. Construction of the building is of brick, concrete and steel. It is laid out to permit the easy handling of raw materials and their finished products.

The company has been located for some years at 1391 Lafayette Ave., New York City.

The new plant gives a vastly increased capacity for production. New, modern machinery has been installed, making for the finest quality of speed in production.

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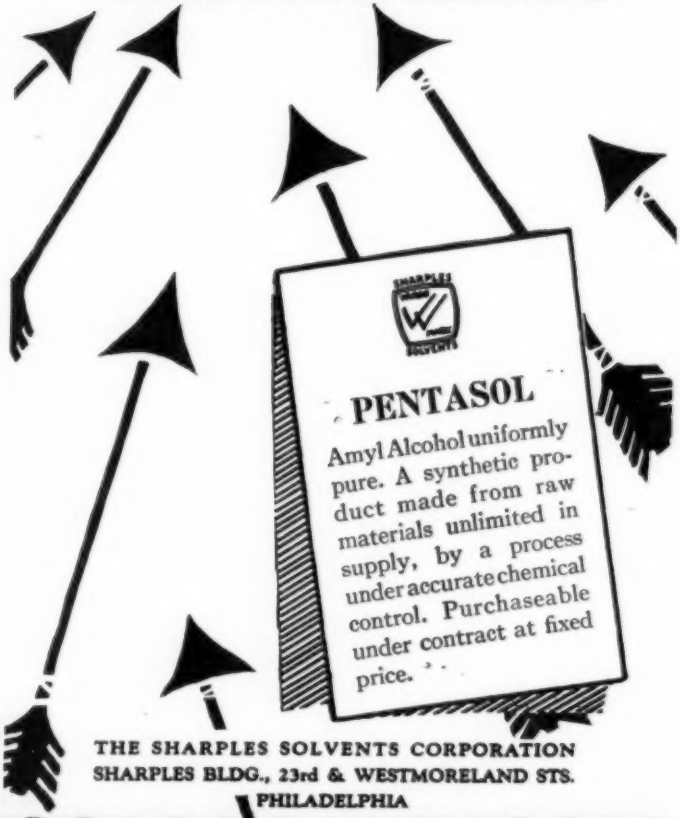
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"Pulling" Lacquer Finish

Note by Editor: In the December issue of *The Craftsman*, published in Sydney, N. S. W., Australia, an article on Lacquer Finishes by F. Antoine Rose contains the following, which may be of interest to American finishers:

Another entirely different method of leveling the lacquer film has been evolved from French polishing practice. Apparently this process is unknown in the United States, where the usual method of handling lacquer follows the way of finishing varnish.

The idea is to soften the surface with a slow solvent and use pressure and friction to force the lacquer into pores and other depressions. A pad is made up similar to a French polisher's rubber, but covered with wash leather instead of cotton cloth. This is wetted with a "body-up liquid," and used in much the same way as in French polishing. A certain amount of "knack" and judgment is required, but the process is not difficult to learn.

The "body-up" liquid is merely a solvent. No lacquer is put on to the surface during the pulling. As the lacquer is partly redissolved in pulling, a certain amount of sinkage takes place afterwards as the lacquer hardens. A second pulling next day will reduce the shrinkage and still further level the pores.

A fairly good "stiffed-up" finish can be produced with the pulling rubber without further treatment, but for the better class of cabinet work, pulling must be followed by a rub with rottenstone to remove stickiness and streaking.

Pulling affords an opportunity of filling pin-holes and deep scratches. If pulling is to follow, a coarser and quicker-cutting paper can be used to level out spray marks without increasing the labor of the later finishing stages. Less lacquer is required to level a surface by pulling than by cutting with abrasives.

On the other hand, pulling softens and swells the lacquer film, and thereby delays that shrinkage which should take place—as far as practicable—before finishing is completed.

Lacquer's well established ability to better withstand the destructive elements is having its effect upon making automobile refinishing a less seasonable business. It used to be that every car owner waited until Spring to have his car painted.

Hanover Graduate Joins Pittsburgh L. & C. Co.

W. F. Figee, graduate of Hanover University, Germany, has recently joined the organization of the Pittsburgh Lacquer & Chemical Co.

Zearfoss Joins Marietta

Mr. Walter Y. Zearfoss, who has been sales manager for Pierce & Stevens, Inc., Buffalo, N. Y., for a number of years, joins the sales organization of The Marietta Paint & Color Co., on February 1, 1927.

Mr. Zearfoss will have Buffalo as his headquarters and will be in charge of Industrial Paint and Varnish Sales in Northern New York, Western Pennsylvania and the Province of Ontario, Canada.

Mr. Zearfoss has had a wide experience, both as a manufacturer and a sales executive.

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EDITORIAL

Give Us a Lacquer Standard

With most manufacturers of finishing materials making a lacquer of some sort, it has become difficult, apparently, for consumers to determine just what the word "lacquer" means.

In other words, a lacquer may be the generally accepted nitrocellulose lacquer, or it may not be. We do not believe that any finishing material, containing such a surplus of gums and such a minimum of nitro-cellulose as to render the film soft and chalky, should be called "pyroxylin lacquer." Apparently there is no standard whereby it can be shown that a product is or is not a genuine pyroxylin lacquer.

One of the larger Grand Rapids furniture manufacturers, who uses a quality-pyroxylin finish, asks this question: "When is a lacquer a pyroxylin lacquer?"

It has always been our belief and contention that pyroxylin lacquers were put on the market to replace certain other finishes, so that manufacturers of various products, requiring a finish of durability and beauty, could get a lacquer finish that would be exceedingly impervious to extremely hard usage; also a film that would be waterproof and impervious to atmospheric conditions.

If the above is true, then we must establish a recognized standard. Perhaps it would be well to have the container labeled "Pure Pyroxylin Lacquer," and unless the product contained a certain percentage of nitro-cellulose, it could not be labeled as above. Immediately the question arises, "what is going to be the minimum percentage of nitrocellulose, and who is going to determine it to make it a standard?"

Probably the American Paint and Varnish Mfrs. Association, working together with the National Furniture Mfrs. Association, could easily work this out satisfactorily.

We believe that if suitable standards are established to properly define modern lacquers, this will solve a problem that is confusing furniture manufacturers and in fact all users of lacquers.

An Open Mind—Why?

The value of an open mind cannot be over-estimated. Without men who possess this remarkable faculty, world progress would be at a standstill.

It is a good thing to come down to a closer application and apply this test to men who have charge of finishing departments.

It is true that today, the majority of finishers are always interested in some product, or some process, that might be superior to anything being used. Then, on the other hand, there are still a few finishers who will not listen to anything that might be new. To their minds, if it is new, it must be unsatisfactory.

To modern varnish and lacquer chemists, together with progressive finishing foremen, do we owe the credit for all recent progress made, and for all of the new scientific advances. These men possess open minds.

The most valuable foremen finisher—one who is virtually indispensible to his employer—is always one who has an open mind.

Then, it is well to remember that finishers who have this commendable quality, are always receiving the greatest co-operation from paint and varnish chemists, and when something good is developed, they are the first to receive it.

Let us all analyze ourselves and see if we do have an open mind, so that the year 1927 may be just a little better for ourselves and for our employers, than 1926.

Oak and Mahogany Find Favor

Judging from what has been exhibited at the mid-winter furniture shows and from plans now under way in offices and laboratories of certain finish manufacturers and furniture companies, there is reason to believe that the return of oak and mahogany to more general use in the furniture industry is not far distant. The mid-summer shows will probably see more of it, and the next January shows still more.

In this connection we are reminded at this time of an editorial appearing in these columns in May, 1926, issue under the significant title "Will Antique Return Oak?" What was said then gives logical reasons for the favorable consideration of oak for use in other than kitchen and office furniture.

"Manufacturers and dealers in oak lumber have long been living in hopeful anticipation that the trend in styles would return oak to more universal favor for fine furniture, cabinets and interior finish. Many things, like styles, move in cycles.

"Today, practically all the popular furniture finishes—walnut, mahogany and colors—are built up or treated to give the surfaces the appearance of having age.

"The effects and appearances of true age and actual usage are obtained by skilful imitation through high lights, clouded, "smoked" or shaded areas, crackle finishes, etc. Numerous antique finishes are popular both in woodwork and ornamental ironwork.

"Will not this trend eventually bring back into favor oak, which was once so popular for furniture and interior woodwork? Oak is a wood that lends itself admirably to a variety of finishes which may be given aged effects that appear at once convincing and attractive."

Lacquers can be made to dry as rapidly or slowly as you wish. Some dry in one minute, some never dry, some take four days, and the average requires about 30 minutes to dry.

Lacquer, necessitating new training and experience, coupled with the necessity for special equipment, has been one of the most stabilizing factors in the auto refinishing trade. The "in and outer," who called himself a painter because he had a brush and can of paint, cannot compete with reliable shops today. The survival of the fittest will continue to weed out those that fail to keep pace with the times and fail to keep faith with the motoring public.

A Study in Color Harmony

Consulting Engineer on Finishes and Finishing Problems calls attention to styles in dress, and Nature's wealth of colors, in pointing out the application of color harmony for use on manufactured products

By Wm. J. Miskella, M. E.

COLOR, color, color—that is all we see now—blacks and whites are merely acquaintances. Colors are friends and the more harmonious they are the closer friends they are to us.

Indeed, color harmony is taking such a hold on the thinking American today that it is no longer considered shiekish to wear a collar to match the shirt one wears. In fact, the acceptance of the use of the colored collar is in an advanced era in which we will have to live for a time to give us an opportunity to look back and say, "Well, that pure white band that we have been wearing around our necks for years, to separate the face from the clothes that cover the body, is extremely severe."

I am going to be so bold as to predict that collar and shirt makers will, in the future, supply us —not with collars and shirts to match, but with collars and shirts that harmonize, and I will say further that these designs of the pattern in the collar and the shirt, such as straight vertical lines or horizontal lines, will be so closely associated with advanced color harmony that a real homely or awkward man will be made to appear like a Valentino. Surely, we will all agree that color, cosmetics and centralized design of women's clothing has practically eliminated the homely girl and woman from our midst.

The point to get is that the women today are a few steps ahead of the men, but a not-far-distant tomorrow will find the man choosing his collar, necktie, shirt and suit with the same care and discrimination that only the ladies now know how to use. When that time comes, we will see men with a collar of one color and a shirt of another—in other words, the colored shirt and collar will be *the thing*. Those who are less particular about their personal appearance may continue to wear white collars, or possibly a gray collar will be substituted for the white, because of the peculiar harmony characteristic that gray has—that of agreeing with most any color, from which the reader has a right to deduct the following rule:

When in Doubt About Colors—Use Gray

Now, we have been discussing shirts, collars and neckties, and the question arises, "What place has such a discussion in INDUSTRIAL FINISHING?" Just this—if we may be allowed to get our minds off our business temporarily and look at our problems from another viewpoint, we may see things in a new and entirely different light.

All that has been said herein applies, not to collars alone, but to all articles that are used in our daily life—automobiles, furniture,

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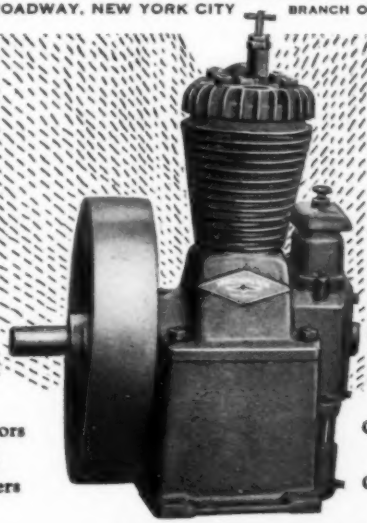

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floor coverings, curtains, draperies, electric fixtures, and even homes and public buildings.

Study Nature's Colors

All we have to do to prove these rambling thoughts to ourselves is to turn to Mother Nature and first observe what she has done; then follow her as a guide. She never created a discordant landscape; never produced a flower that was not colored harmoniously. We couldn't find, even in the flowers, or weeds that we dislike, a single color discord.

Nature paints the flowers of the springtime in delicate and beautiful shades and tints of blues and yellows, as a warning to us that warm weather is on its way and that we may consider the use of cool colors in our activities during the next three months. Likewise, she paints the fall flowers, the leaves and the landscape in colors closely related to the reds and browns, in order that we may have Nature's warning that winter is coming and that we will be more comfortable if we adopt the warm, cheerful colors on the bright side of the chromatic circle.

No painter or decorator need ever worry about color harmony, if he will but study the colors of the flowers. Take a single yellow pansy, for example. Study its colors, turn it this way and that, look at it in the sunlight, look at it in the shade—try to find something wrong with it. Try to criticize its color combination. You just cannot find a fault, for Mother Nature made it perfect.

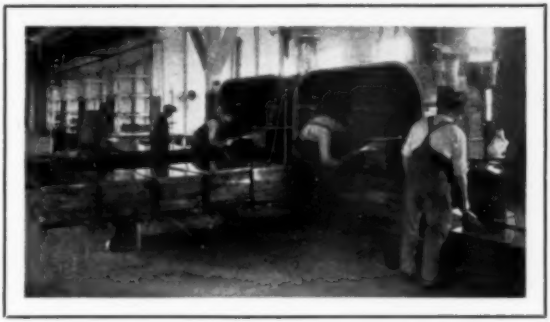
If you study it closely for a scientific reason, why it is so beautiful, you will find tucked away in the center or over on the side a little purple—just a little to make you notice the beauty of the yellow. In other words, Mother Nature in her wisdom has introduced a little of yellow's complimentary color in the pansy to emphasize the yellow. Without the purple, our attention would not be directed so forcefully to the yellow.

Value of Suitable Colors

So it is with everything the industrial finisher paints or lacquers or handles. There is a certain contrasting color that he may use to draw attention to the color he wants to emphasize. Certain colors agree harmoniously with whatever colors may be used, and the enterprising finisher, who desires to raise himself to a higher place in his profession, has an opportunity to make a study of color harmony and he is sure to have his wish gratified.

I consider judicious selection of colors to be used in finishing a certain article of more importance than good workmanship. When there is no clash between colors the eye sees the article as a whole. Consider a taxicab finished in discordant colors, every defect that an expert painter could pick in the finish would be noticeable—brush marks, irregularity in the line separating the colors, variation in the shades and tints of the colors used—all these would be especially noticeable.

On the other hand, had a set of harmonious colors been chosen there would have been presented to the eye of the observer a pleasing combination as a whole, and other defects would be unconsciously overlooked because direct attention would not be drawn to



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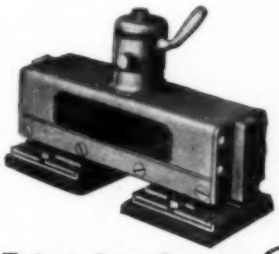

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them. It should be noted, particularly in this connection, that the observer need not know anything about color or color harmony, because a color discord will shock him through his eyes just as a musical discord shocks him through his ears, regardless of whether he knows anything about music.

No industrial finisher can be really successful who cannot, in a very short time and with little effort, mix up from colors on hand the harmonious colors that he desires to use. The thinking painter does not have to be handicapped by not having certain special colors in his possession, if he knows the fundamentals of mixing. With five kinds of paint to experiment with—red, blue, yellow, white, and black—he can quickly mix up a sample or a quantity of any tint or shade of color within reason.

Colors and collars are more closely related than we think. Let us watch their future use as an inspiration to introduce more color harmony into our industrial finishing problems.

Better Finished Radio Cabinets

Pointing out causes of complaints about the finish on certain radio cabinets and explaining how to remedy these faults through the use of improved methods and materials

By C. D. Wehmer

COMPLAINTS are being registered because the finish on many radio cabinets is not up to the standard of that found on most pieces of medium-priced furniture. Even solid walnut cabinets, as well as some faced with fine veneer, are so poorly finished that they present a cheap appearance when placed beside nicely finished furniture from the average factory.

The trouble with cabinets of the better class, so far as I have been able to discover, is that the pores have not been properly filled in the first instance. For the most part, these cabinets have been finished in lacquer, which does not flow into the pores and supplement the filler in quite the same way as varnish. When porous wood is to be finished in lacquer, it is important to have the pores filled up level with the surface. By so doing, several coats of lacquer and a lot of hard rubbing will be saved in producing a good finish.

A Peculiarity of Gum

Many radio cabinets are made of gum wood; and the cause of the poor finish on these is often due to the careless way in which the wood surfaces have been prepared for the finish. In final preparation for the finish many of these cabinets have been sanded with material that is altogether too coarse, and which was applied with too much pressure for such soft wood. To rub these cabinets to a high-class finish, after the usual number of coats of lacquer, is practically an impossibility, owing to the prominence of lifted grain or fuzz,

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loosened by the coarse sandpaper and raised by the stain.

Where lacquer is used, it is imperative that management insist upon the woodworking department raising its quality of workmanship to meet the new order of things. Some concerns have done it, and there is no good reason why all others should not follow suit. Lacquer is here to stay; it hasn't the same body as varnish, and it requires a better prepared surface to make as nice a finish with the same number of coats, but this better surface in the white can be produced without any extra cost—only a little more care is required. Even if it did cost a little more to produce a suitable surface for lacquer, the fact that the cost of applying lacquers with the spray is only a fraction of the cost of applying varnish with the brush would, on the total cost of production alone, more than compensate for any additional cost in cleaning up the wood to give this new material a fair chance. The better woodworking would also remove a handicap under which many finishers are obliged to labor.

The Problem of Fuzz

The final work in preparing the surface of wood for the finish, especially gum wood, should be done with very fine sandpaper, and with light pressure. By fine sandpaper, I do not mean coarse paper that has been worn down almost smooth. Sandpaper with fine, sharp cutting points, that will remove existing fuzz without raising more to take its place, is the requirement.

It is not to be assumed from what has just been said, that the finisher is always entirely blameless for the poor finishes to be seen on many lines of cabinets. Most finishers prefer to use a water stain on gum wood; when this is done, a certain amount of fuzz is bound to develop, regardless of how carefully the wood has been prepared. The mistake some finishers make is to coat over the wood as soon as the stain is dry, without doing anything to remove this fuzz. A good way to cut down this fuzz is to rub it with fine excelsior, which will make the surface as smooth as glass. Still a better way is to apply a coat of thin shellac; then sand smooth before applying the lacquer.

Better than either of these methods, however, is the use of a new preparation put on the market by one of the advertisers in this journal. This material stains and fills the wood in one operation, without raising any fuzz, and it makes an ideal surface for lacquer.

Speaker Grilles

Where most finishers find their greatest difficulty, is the grille work at the mouths of loud speakers. Many of these grilles look as though the finisher was afraid of them, and had given them only a coat of shellac, or some other similar material.

Grilles can be cut either before or after they are finished. If finished before they are cut, the finish should be thoroughly hard, and rubbed before cutting. The finished side of the panel should be smeared with grease, or heavy oil, to prevent the friction of sawing from burning the finish along the edges of the cut. Over this grease, place a sheet of thick waxed paper to prevent the grease from penetrating the back of the panel, which is placed next

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on top in the pile. If the grease is allowed to enter the back of the panel, it will mean considerable sanding before the gauze can be glued over the back of the grille.

After the intricate cutting has been completed, the edges should be stained with an oil stain that will not soften the finish. Staining may be done by dipping, and after the surplus has drained off, clean the face of the grille with soft cloths that are free from lint.

For high-grade work, the wood cutting should precede finishing. Of course, all grilles should be made of plywood—five-ply—with centers a good strong wood, preferably birch. Some finishers dread to rub grilles, but this work is easily performed with a felt block. The finished edges should be dulled with a stiff brush (using oil and pumice) before the face is rubbed.

By following some of the above suggestions, a much better finish can be put on radio cabinets without any additional cost to the manufacturer.

Selecting Finish Materials

This article applies particularly to office executives in concerns that purchase and use finishing materials, supplies and equipment. I have in mind the man who, although uninformed himself in matters of practical finishing, insists on making the selections and purchases without consulting the head of his finishing department.

He depends entirely upon what the salesman or agent tells him. The salesman perhaps, is all in good faith, but he may be lacking in practical or specific knowledge of this particular concern's requirements, problems and conditions. The salesman hands out his firm's books on lacquers and stains. Mr. Office Man reads it and puts in an order.

The products arrive and the finisher begins work. Probably the lacquer is not new to him for he is skilled in the art and he reads INDUSTRIAL FINISHING. The office man has read in a manufacturer's book that the material will do so and so, and the only thing for the finisher to do is to let him have his way. He will wake up sooner or later. I have watched this a great many times and, in fact, I had the same experience once myself.

Mr. Office Man, you take too big a chance. You and your head finisher must get together and find out what is best. The salesman should see the head finisher and see how things are going. Friendly co-operation will be better for both of you. The factory will produce more and the finishing room will be in better harmony. When it is not in harmony, the head finisher and his men are all upset, and the work shows it. Use good judgment and try a little co-operation, and you will see how much smoother things will work.

Here is an example: A salesman comes in and talks lacquer to the office man. He tells of it's drying and sealing qualities. He is right. The company can get out the work quicker by using lacquer, and that means greater production. The office man finally reads the book through and gives an order for a 50 gallon drum of lacquer and a 50 gallon drum of thinner. Everything is all set.

The practical foreman is not surprised when he starts to work the lacquer. He starts the spray

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working a nice wet coat and finds, in five minutes, a perfectly dry board without the slightest trace of lacquer. Perhaps this is just what he expected. But the office man did not. And why? Because he bought too cheap a lacquer and expected it to do the same work a high-priced lacquer would do. A piece of pine was used for this trial. Three coats were required before the lacquer would begin to show up. Now this was costly, for 50 gallons of lacquer did not last long.

The office man thought he was all right in doing what he did. But if he had talked with his foreman finisher, he would have learned that he had no binder to hold up the lacquer. This lacquer was a good product but not the correct grade. The salesman supplied just what was ordered. He worked in the dark, because he did not know what was really required; he did not meet the head finisher nor see the woods being used, or the class of work being done.

The result was that lacquer was thrown out and the company went back to the old materials and methods. I feel sure that the only way to sell correct finishes is for the salesman to see the head finisher, as they do me, and talk things over. The head finisher will tell the salesman what the nature of the work is, what the requirements are and what difficulties, if any, may likely arise. From this information the practical salesman can quickly determine what goods will fill the bill. The products I use are purchased from firms that advertise in INDUSTRIAL FINISHING and these firms are back of their advertisements.

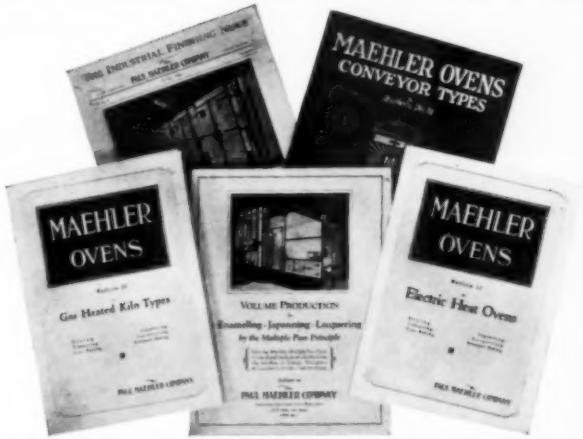
We installed a spray outfit which was advertised in INDUSTRIAL FINISHING and it has worked wonders in saving time. I am well pleased with it. My advice to salesmen is to get to the foreman finisher and make your demonstration. Get into the finishing room. That is what puts the goods over. A salesman saw me a few weeks ago and asked if he might give a demonstration. I said, "Go to it." I stained a case for him a week ahead, so it would be well dried out. I did not use lacquer in my department, so I knew that it would be a hard task to get it in, for it had been considered too expensive. The salesman made a fine demonstration and the result was a beautiful lacquer job.—L. S. Decker.

Stirring Is Inadequate; Do Some Pouring Also

Pigments ground in varnish and japan will settle more or less, and they should be thoroughly distributed before attempting to apply the material. Simply stirring does not accomplish the desired result, particularly if the pigment is light and fluffy. It is not only necessary to thoroughly stir, but to pour it back and forth from one container to another many times.

The average man is not inclined to do this, because it is tiresome work and does not seem to get him anywhere; the result is that there is a lack of uniformity of color, body, luster, and general good appearance on the work, not to count the waste of unused pigment. If care is taken, there would be less complaints and more satisfactory results.—J. H. M.

This Section is devoted to the application, baking and polishing of finishes to be dried in ovens.

Baked Finishing

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Progress in Automobile Finishing

This article is another of a series by a Consultant on Finishing problems in which the system of finishing by flow coating and forced drying is explained in detail

By K. N. Kathju, M. S.

AFTER having gone through all the hammering, filing, priming, glazing, sanding, washing and oven-drying operations described in last month's installment of this article, the clean, dry, car body is placed on a turntable preparatory to its being given the first coat of color varnish of any desirable shade or hue.

The color varnish is reduced to a desired viscosity,* or brushing consistency, with either turpentine (wood or gum) or special spirits, as recommended by the manufacturer of the material in use. The material thus thinned is strained through a triple folding of a piece of nainsook into a quart cup containing one 1½-in. and another 3-in. mixed, badger-hair brush, previously cleaned.

A Bit of Brushing

Each of the three color varnishers thoroughly tack-rags the upper part of the car body, one on each side and a third on the back. This accomplished, they proceed to color-varnish the window openings and the window reveals, using the smaller brushes. On larger surfaces, 3-in. brushes are used. After the color varnish has been laid on, it is brushed even and all surplus is removed with the brush (which is wiped off on the edge of the cup) before the color varnish gets a chance to set.

*To be discussed in a subsequent article.

The setting of the material before the surplus has been removed and the surface brushed even, will result in objectionable sags and brush-marks, to the discredit of the operator. Any splashes and runs of color varnish below the belt moulding may be wiped off with a piece of nainsook moistened with the reducer in use. The car body is again ready to be set in motion, and is pushed on to the conveyor.

The conveyor with its precious weight reinstated travels over a flow-pan (refer to the diagram), provided with adequate drip pans on either side for a length of 15 to 20-ft., depending upon the rate of motion of the conveyor and the setting qualities of the color varnish used. The flow-pan itself is provided with an adequate reservoir from which the material is continually forced into a metallic or rubber-lined flexible material hose. The free end of the material hose being surmounted with an aluminum flow-nozzle. The paint reservoir is covered at the top with at least half a dozen layers of cheesecloth through which the color varnish is strained as it is flowed on the body. This insures a clean supply of the material continually, for flowing purposes.

Flowing on Material

As the body moves along the conveyor, an operator quickly raises the material hose to the level of the belt moulding and

holds it at a distance of about 6-in. preparatory to flowing the cowl. The flow nozzle, with material continuously flowing through it, is rapidly carried across the cowl, the operator being careful not to go over the moulding, as the color varnish will, in all probability, wash some dirt onto the surface. The flatter part of the cowl is next thoroughly flushed with the material, clear down to the sides.

This is followed with flowing the front door, beginning immediately below the moulding on the door panel; then to the door pillars, under the door (being careful not to wash dirt, etc., from sills onto the surface to be finished), the rear door, the rear quarter panels, and the rear panel.

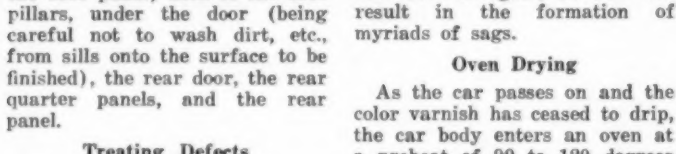
Treating Defects

The scrutinizing eye of the operator goes over the flowed surface, and air bubbles, dirt, etc., are flowed over again with a view to wash them off the surface. The onlooker will notice that the door hinges are flowed before proceeding to the car body proper, to avoid washing any dirt onto the panels. Again, the doors are left open a little bit to avoid formation of sags immediately under the hinges.

A word of explanation in regard to the setting of material is again whispered to the flow-men. If the flowed material has started to set, it is not desirable to flow over it again, as this will result in the formation of myriads of sags.

Oven Drying

As the car passes on and the color varnish has ceased to drip, the car body enters an oven at a preheat of 90 to 120 degrees F. It passes through the oven in two to three hours, having re-



A recommended layout of equipment for flow-finishing process, which includes sanding, brushing, baking and air drying. (Not drawn to scale).

A—End of construction.
B—Rough sanding.
C—Washing.
D—Hammer out.
E—Final wash.
F—Brushing upper prime at turntable.
G—Flowing prime.
H—Drip pan.
I—Water sand.
J—Glaze, at turntable.
K—Water sand.
L—First color varnish (upper) at turntable.
M—Flow first color (lower).
N—Drip pan.
O—Oil sand.
P—Second coat color (upper) at turntable.
Q—Flow and drip second color (lower).
R—Oil sand.
S—Third coat color (upper) at turntable.
T—Flow and drip third color (lower).
U—Oil sand.
V—Fourth coat color (upper) at turntable.
W—Flow and drip fourth (lower).
X—Oil sand.
Y—Finish (upper) at turntable.
Z—Flow finish (lower).

ceived a maximum heat of 200 degrees F.

Sanding and Cleaning

As the car body emerges from the oven, it is oil-sanded, using No. 320 Al. oxide sandpaper or its equivalent. All dirty spots, sags, etc., are carefully sanded, wiped clean with towels or cheesecloth, and thoroughly tack-ragged. In fact a sedate looking inspector, equipped with a strong spotlight, chalks out defective spots for sanders to take care of.

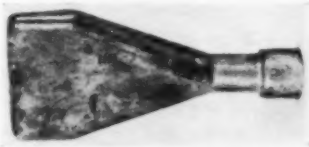
The car body is again put on a turntable and thoroughly tack-ragged. The upper half is brushed as heretofore, with a second coat of color varnish, at the gravity and viscosity recommended. Put on the conveyor, it is given another coat of the material below the belt moulding and allowed to drip. It passes on into the oven and out again in two to three hours; maximum temperature, 200 degrees F.

Inspection and Trimming

The car body is again carefully inspected for sags, runs, dirt, etc., is oil-sanded and given a third coat of the material. It is inspected again, sanded, and given a fourth coat of the material. At this stage, as the car body emerges from the oven, it passes onto the trim line. After it has been trimmed by a "flock" of trimmers, who look like bees on a beehive, it passes on to the rubbing deck, for final sanding. The sanding is accomplished with a fine grade of sandpaper like No. 400 Al. oxide or its equivalent. The surface is wiped dry.

Final Varnishing

As the car body is put on the turntable again, the upper part is tack-ragged and brushed with a high-grade finishing varnish, applied with clean finishing varnish sets, the finishers pick up brushes. Where light colors are used, it seems advisable to tint the finishing varnish with a desired quantity of color varnish, in order to avoid streaks, off-color spots, etc. Before the finishing



A typical flowing nozzle.

lint, etc., that sticks to the freshly finished surface, with the aid of a strong spot-light and using a pickstick. This necessitates a very steady hand.

The car body again passes onto a flow pan and is given a flow-coat of tinted or clear finishing varnish. The finishing varnish should be allowed to air-dry 24 hours at room temperature (75 to 85 degrees F.). The car body thus finished is given a final paint inspection and, if O. K., is sent to the assembly line.

Conclusion

The above gives an idea of the saving in labor through flowing, which more than outweighs the justification of its universal use in preference to tedious brushing. Whereas at least a dozen men are needed to brush relatively small surfaces, only two flow men can take care of the remaining three-fourths surface. Flowing also cuts down the cost of sanding to a considerable degree.

Lacquer finished cars may not require finishing as often, but owners of these cars are going to be in the market for refinished jobs, for a change of color at least.

Modern Japanning Practice

Third installment of a series of articles on baking japans, this one dealing specifically with the cleaning of metals before they are dipped, and with the prevention of dust and dirt in japan tanks and on wet japanned surfaces

By T. E. Moorefield

THE first rule to observed in obtaining good results, regardless of the method of application, is, "Keep everything in the japanning room scrupulously clean." This applies not alone to the dip tanks, drain boards, racks, ovens, spraying equipment, brushes or other equipment, but also the floor, walls and ceiling of the room as well as the work itself.

Some manufacturers of sheet steel products give their work a coat of oil, to prevent it from rusting during storage or shipment. If this oil is not thoroughly removed, the finish will not adhere well to the metal, but will pull away in spots—particularly on the edges and in the corners, also around bolt or rivet heads and seams.

Cleaning Metal Articles

Probably the easiest way to get rid of grease is to bake the steel for about 30 minutes at a temperature 10 to 25 degrees higher than that used in baking the finishing material, or to pre-heat the metal to 400 or 500 degrees F., if no solder has been used on the work. This drives all of the oil out of the pores and burns it off.

Where time is an important factor, or where the capacity of the oven will not permit of this pre-heating process, the grease can be removed by washing the steel with naphtha or gasoline.

Some concerns use a caustic soda solution or other chemicals for this purpose. There are now on the market automatic washing machines which take care of these cleaning operations without the aid of manual labor. Care must be taken, however, to thoroughly wash away all traces of these chemical agents with clean water before starting to apply finish to the article, for caustic soda and most other chemical cleaners are strongly alkaline in nature, and will cause pitting similar to that caused by the presence of grease on the surface. Also, if these materials are allowed to remain on the metal, they are likely to cause rust to develop in time beneath the finishing coats. Then the finish will eventually scale off over the rust spots.

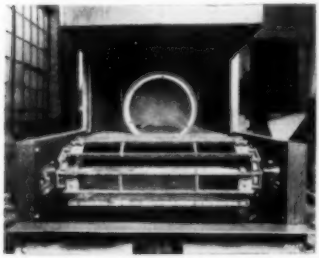
Still other finishers clean their work of all foreign matter by sand blasting. This leaves the surface of the metal in a slightly roughened condition so that the first coat of finishing material gets a good hold on the metal. The disadvantage of this method is that these small scratches and pits must be thoroughly filled to a level surface, with japan or some other material before a satisfactory finish can be obtained. This sometimes means the use of one or two additional coats.

If the metal is rusty or has foundry scale on it, this must be thoroughly removed before a smooth, durable finish can be ob-

tained. This can be done by pickling or sand blasting, or by the use of one of the patented rust removers now on the market.

Pickling

Pickling is done by dipping the metal into a four percent solution of a mineral acid such as hydrochloric (muriatic) or sulphuric (oil of vitriol) and then rinsing in clean water and drying it. The acid removes the scale and rust, while the rinsing and drying removes any dust or dirt particles. Pickling has the disadvantage, however, of eating away a small amount of the metal, causing it to become more or less porous and therefore more likely to absorb some of the enamel.



An automatic washing machine used in large production. This equipment cleans, rinses, dries and delivers metal parts to the desired location without personal attention.

Sand Blasting

Sand blasting, as mentioned previously, mechanically cleans the metal of all foreign substances, and leaves a slightly rough surface to which the japan adheres firmly. At any rate, all rust must be removed before the metal is coated, or the rusting process will continue and sooner or later it will ruin the finish.

Specks of dirt on the work may be caused by a number of conditions such as trucking, open doors or windows, accumulation of dust or soot on the oven walls and flues, dirty japan, dirty hooks, dirty metal, floating lint, etc.

Burning Off

Probably the most general and annoying form of dirt is caused by an accumulation of japan on the hooks used for dipping. The sharp edges of the steel cut this accumulation, allowing the japan to loosen the particles as it flows off. Sometimes this causes a dirty streak all the way down a fender or a sheet of steel. The hooks should be burned off and cleaned regularly once a week, or whenever there is any appreciable accumulation of japan. Any scale or rust formed on the hooks after burning off the japan should be removed by pickling in dilute muriatic acid, if necessary.

Cleanliness Is Important

Floors in the japan room should be oiled to keep down the dust. Doors and windows should not be left open, as drafts will blow dust or dirt from the walls onto the work. As little trucking as possible should be done while any unbaked work is exposed. Keep all linty rags out of the finishing room, if clean work is desired. Of course, the metal should be clean before it is dipped.

In rejapanning old work, it is advisable to completely remove the old finish by immersing the parts in a tank of caustic soda or other strongly alkaline solution, which is kept hot by steam pipes or a gas flame. Such solutions will completely remove the old finish in a few hours, if kept hot and of the proper concentration.

After removing the old finish by this method, or by paint and varnish remover, the work should

be thoroughly washed with hot water and wiped dry with clean cloths to remove the moisture and the alkali. The seams should be immediately blown out with a strong jet of air. If any caustic is left on the surface or in the seams the japan will not stick as it should, and the work will have a rough, pitted appearance.

(To be continued)

Puttying Spot Welds

On page 52, of the October, 1926, issue of INDUSTRIAL FINISHING, I notice part of an article with sub-head "Putties for Wood and Metal."

I am particularly interested in a putty to be used on metal, for puttying the spot welds in our product. While we have a fairly good putty, we do not get the results that I would like to. We have tried all kinds of formulas with various degrees of success.

I would appreciate any information which you could send me regarding a formula for a putty on steel so that we might try it out.—J. R. C., Manager of Steel Production.

Putty for spot welds must be of such character as will not sink down into the deepest depressions, nor crack upon drying in those places where the strata of putty is heavy.

I am mailing to you direct a small can of such material for your trial. It dries promptly, is very tenacious and sands down to satisfactory smoothness. Keep the can closed tightly when not required, because the vehicle is quick-setting and would cause hardening; then the putty would be contaminated with hard crusty particles.

Let me have your report after making the test, and should you then want the formula I shall give it to you.—E. Perry.

Treating Galvanized Surfaces

The writer noticed two inquiries in INDUSTRIAL FINISHING with regard to enamel not sticking on galvanized material. We have found that washing galvanized material in boiling caustic solution and rinsing same (to insure washing the caustic off) has proved quite successful.—A. F. Erickson, Superintendent, All-Steel Equipment Co.

Striping Colors.

As to striping colors, it is patent that artist material in small tubes and ground in oil is the most available. The required amount for the immediate job should be squeezed out on a plate of window glass, mixed with raw linseed oil and a touch of japan, and thoroughly worked with a pallet knife until it is a soft paste. Then the pencil should be dipped into a small cup of turpentine, worked into one edge of the mass of paste, and drawn across the glass for a test of its working capability.

As every painter knows, skill at striping is attained only by practice—never ending practice—nothing else but practice.

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Thinning, Dipping and Draining Problems

Metal Enameling in Small Quantities

Calling attention to problems involved in smaller volume production and citing an instance of how methods and equipment must be developed and operated to suit conditions

By H. A. Donaldson

A CONCERN in the office fixture business made a small metal punching device that was essential to their woodwork for use in a certain class of filing. Roughly, this device consisted of an assembly of cast iron and steel pieces about an inch thick and 3x7-in. in area. Production went forward at the rate of nearly 400 a week. Twice a week a batch would be completed ready for painting; these were painted in the afternoon and were ready to put in stock racks the following morning. Air-drying black enamel was used for this typical, small-lot, finishing job.

Men in the management were progressive enough to know that the brush method being used was not the best thing in the world, but they were getting satisfactory results and were awaiting something really better for use on the limited quantity of articles per job. In this they were really wise.

You can always make a good showing on continuous production of large quantities—these are the spectacular things we hear about—but in point of numbers there are more concerns who are struggling with the problems of intermittent production. Here it does not pay to change methods from week to week, just to save a few cents on materials, or an hour's time.

From Brushing to Dipping

But a slight increase in volume and an attractive new material made it worth while for these people to change their method. What the company did, and the minor changes made as experience increased follow:

There was provided a dip pan two feet square and a drain board to carry the drip back—or twice this area. This was inexpensive and for it, a section of bench space was given over as a permanent coating bench, instead of continuing the old plan of having workmen get out the can of enamel twice a week and sit down to paint.

Then, instead of washing the surfaces and cleaning the threaded holes by "sozzling" around in kerosene, workmen washed the punches in benzine, in a sheet metal pan. Later, they substituted the enamel thinner for the benzine and got better adhesion.

The matter of dipping was, as is usual, one of trial. Over the drain board racks were arranged on which to place the punches as fast as they were dipped; these racks were carried away when the space became congested. For

the work, a viscolac dip enamel, in a bright black finish, was used.

Thinning the Enamel

First, the dip enamel was used just as it came from the containers but, as is usually the case, it was too thick and as a result drips and runs formed. Thick enamel always clings to an article in greater amount than thin material and, unless this has a chance to drain off to a large extent before the article is hung up, runs are almost sure to form. The remedy is obvious—thin down the enamel; for this purpose the workmen used the thinner which had become dirty in washing the parts.

Hand dipping is pretty fast, and it was found that until 25 to 30 percent of the mixture was thinner, the workmen had trouble with runs and drips along the lower edges. To them, the surprising part of it was that when they got the right consistency, they didn't need the drain board at all. The enamel was setting a little as fast as each part emerged from the bath; turning over the pieces as they hung them up, there was no sign of a sag.

Further Possibilities

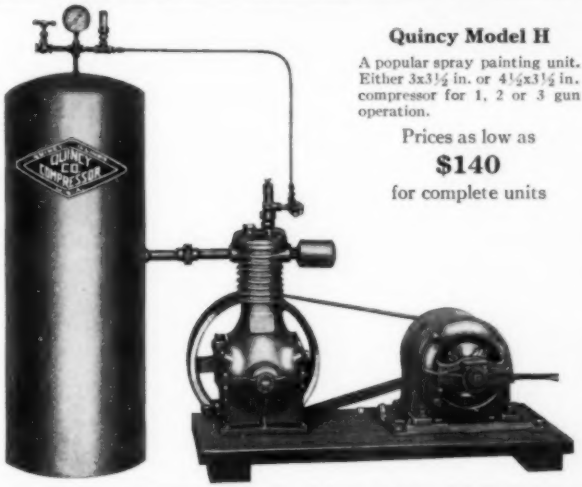
Two possible improvements came to mind and were considered for this work, after the above process was well under way. They were rejected merely for the reason that the volume of work was not great enough to warrant, or to show a profit on the added cost, and they are mentioned here simply as points of information.

One is the use of an acid-cleaning-bath. This would have been more effective than the benzine or the thinner, in washing off the oil and products of handling. For this purpose, the acid bath would have been made in equal parts of water and sulphuric acid and would have been kept in a glass or earthen container. A bath of this kind allows maximum adhesion for the enamel. But following the acid treatment, another bath would have been required—this time a thorough washing in hot water to remove all traces of the acid. And this would have included the requirement of dipping immediately after the parts were dry, before rusting could get a start.

A mechanical dipping device was also considered because of its definite rate of production and uniform results, but the cost of the simple device they had in mind did not seem warranted. It was also taken into consideration that articles are drawn out slower with mechanical handling, and this would probably lead to greater consumption of enamel as the latter would then be used with little or no thinner.

Probably no color more vividly and readily reflects the striping and ornamentation than does black. Just a touch here and there of any color always shows a rich harmony and contrast.

Finishers and painters who are expert in the handling of paint, varnish and enamel are more apt to encounter trouble at first in the application of brushing lacquer than are those who are less accomplished with old materials; they have well formed habits which must be broken before they can get accustomed to the new brushing method required by lacquer.



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Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Lacquer Damages Celluloid Inlay

On some of our wooden articles, which have large pieces of celluloid inlays, the lacquer has a tendency to sink into the celluloid and appears to "eat" into the material. What seems to create this condition?—N. J. I.

This is easy to answer. Lacquer solvents do dissolve celluloid and the only way to remedy it is to use a lacquer with the minimum of active solvents. Such a lacquer would have less solvent action on preceding coats also, and in our opinion would be preferable.—I. F.

Lacquer; Rain; Bluey

We are experiencing trouble with lacquer in the rainy weather and find that after several days, when the article has been settled, the polish has a kind of bluey appearance. We have experimented, and find that it helps matters along if we do not lacquer in this weather.—Jersey City.

Regarding the bluish appearance of your lacquer after spraying on rainy days and polishing: Assuming that this is not the ordinary blush, due to moisture in the air—which should not occur with high grade lacquers—there are three possibilities. One is that the lacquer contains resins that are not suitable for lacquers, as only a few resins work compatibly with nitro-cellulose. The so-called "gum blush," often occurring in lacquers, may be your trouble.

The second possibility is that your polishing oil contains some of the fluorescence or bloom frequently noticed in petroleum products. De-bloomed rubbing and polishing oils are available, which would eliminate that possibility.

A third possible cause is the absorption of moisture by stain or filler that later works into the lacquer coat. I have seen this occur on water-stained mahogany, and it was remedied by using a thin coat of lacquer sealer over the water stain, before filling. A wood lacquer reduced one to one would probably do, although specially-prepared sealers are available. My suggestion is that you try out your own, and use in two other brands of wood lacquers, with and without the sealer coats, and if you use polishing oil, be sure it is neutral and de-bloomed. —S. P. Wilson.

Bronzing Routed Outlines

Your letter with clippings from Sept., 1925, INDUSTRIAL FINISHING, in answer to our inquiry regarding filling in routings, has come in and we thank you for same. However, we have since learned of a more positive and correct way, which if published would be a very big help for many finishing departments.

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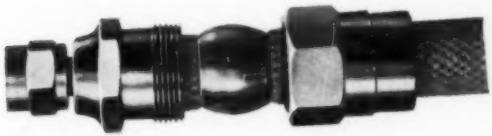

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Undercoat for Buffed Finish

Do you recommend, as an undercoat, a lacquer sealer which is substituted for shellac? We are staining, filling and then lacquering, and according to the article we apply anywhere from three to four coats of lacquer and then buff it to a high polish. We experimented with an undercoat of shellac, and then put several coats of lacquer on top of it and then buffed it, but found that the heat penetrated through the lacquer, causing it to soften and peel off, so the undercoat of shellac did not work out satisfactorily.—O. S., Inc.

Where buffing is to be done, an all lacquer job is by far, superior to a shellac undercoat followed by lacquer. The heat of buffing unquestionably has a softening action on shellac.—S. P. Wilson.

Hydrometers; Lacquer Testing

We notice a paragraph in a recent issue of the INDUSTRIAL FINISHING which points out that all lacquers should only be mixed by the use of a hydrometer, and should never be mixed by guess. We have been trying for some time to locate a suitable hydrometer for this purpose and upon seeing this article, we believe that you may be of assistance to us.

As we manufacture wooden-plug, fishing baits, our dipping pans are all very shallow, not to exceed 8-in. in depth, and we would like to get a small hydrometer about 3 or 4-in. long, with which we could test the mixture in the tank without using a hydrometer test tube. Can you direct us to a source for such a hydrometer, if they are made this long, for this purpose?

We would also thoroughly appreciate any data you can supply us in regard to the proper hydrometer reading for both clear and colored lacquers, to be used for dipping purposes.—S. Co.

In the first place, the value of hydrometers in thinning lacquers has been over-estimated by many people. In the days of varnish, they had a definite place, as varnishes had a fairly uniform specific gravity for the same concentration of solids, and the naphtha and other thinners used had a specific gravity sufficiently low to show appreciable change on dilution.

Such a variety of lacquer solvents are used, of specific gravities ranging from over 1.0 to less than 0.8, that it is quite possible for a clear lacquer to show a higher hydrometer reading *after* thinning. Pigmented lacquers, of course, are much heavier, and with them a hydrometer reading would have more significance.

It is my belief that for lacquers, a viscosity determination means much more than a hydrometer reading. Assuming you have, by experiment, worked out the proper dilution for your lac-

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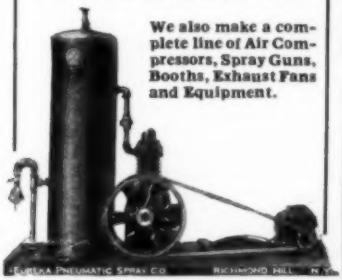

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quers and determined its viscosity at that point, all that should be required thereafter would be to thin your material to the same viscosity, and if the manufacturer kept the goods uniform, you should secure uniform results. It is the viscosity of lacquers that determines, to a large extent, the smoothness and flow of the material, either when dipped or sprayed. This is a characteristic that, so far, has been neglected.

The simplest apparatus for determining relative viscosities, consists of two identical glass tubes, each with an etched ring near the top. If one is filled with a standard lacquer, to the mark, and the other filled likewise with the unknown, and then both of them are tied together by a rubber band, the two will be of the same viscosity if, when both of them are quickly inverted, the air bubbles rise through the lacquers in the same length of time. Only a small amount of material is needed, and the results can be obtained very quickly. Both lacquers should be at the same temperature, of course. These tubes are obtainable through any large dealer in chemical supplies.

As for your original question regarding small hydrometers for your shallow dipping pans, I know of none suitable for the purpose. Should you still desire one, I suggest you write to Eimer & Amend of New York City, or to any other large chemical supply house.—S. P. Wilson.

Bronze Lacquer Striping

We seem to be experiencing difficulty in striping our two-tone work, and wonder if you could perhaps offer any suggestion that might eliminate some of our trouble.

We use lacquer in the finishing of our product and our trouble seems to be that in applying the bronze in striping, which bronze is mixed with French lacquer, that this cracks off after it has been applied for some time.

Another of our difficulties seems to be that the lacquer dries too fast for striping, which is done by hand with a brush. Some of our work has long grooves, and in striping these grooves it is necessary to wipe the edges clean. In addition to the striping material drying too rapidly, it also seems to attack the other finish along the edges of the grooves. It is impossible to avoid getting this material along the edges of the grooves, which grooves are about ⅛-in. wide and the same depth. Can you therefore, offer us any suggestion whereby we can:

1—Avoid the cracking-off of the bronzing stripe, after it has been applied for some time.

2—Avoid the striping lacquer drying too rapidly to wipe off the overflow on the edges.

3—Avoid the striping material attacking the other finish.

Our difficulty seems to be, as stated, in the striping of bronzing materials which are mixed with French lacquer.

Our products are wood window display fixtures, which of course, must stand the rigid conditions of heat, etc., of a show window. With the exception of enamel finishes, we are using lacquer.

Also, is there any possible way for us to get the shiny gold effect, as on chinaware.—T. O. O. Co.

The French lacquer which is mentioned, is probably French Varnish which is nothing more nor less, than a fine solution of

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refined, bleached white shellac. Another oil material, sometimes known as French lacquer, is made of West Indies gum with a little japan wax and aluminum stearate added to give a flattening action. Naturally, this has a tendency to go brittle with age, especially if bronze powders have been mixed with it. This probably accounts for the chipping trouble.

The reason the present bronzing solution attacks the lacquer finish, is, that the French varnish probably contains large quantities of alcohol, which is also a partial solvent for the lacquer used. This also accounts for the fact that it cannot be wiped off successfully, when a mistake is made, after having been applied over the edges of the grooves.

The large content of alcohol also accounts for the quick-drying condition, which makes it difficult to draw a stripe. If the workmen are sufficiently proficient, they should be able to stripe in these grooves without getting the bronze over on the edges of the grooves, where it is not wanted, unless the construction of the parts is such that this is impossible to do.

Reputable paint and varnish houses can furnish bronzing lacquers, together with a special type of striping reducer, which will permit bronze stripes to be drawn with these lacquer materials. However, there will be a slight softening action for a short time upon the undercoats of lacquer, and any mistakes made in drawing these stripes cannot easily be removed.

For this reason, it might be better to use a varnish bronze liquid, in which to mix the bronze powders for drying the stripe.

Then, if the stripe gets beyond the edge of the groove, or, if for any other reason, it needs to be removed, it can be wiped off without affecting the lacquer undercoat. The wiping can be done by simply using a damp rag wet with turpentine or naphtha, provided the bronze coat has not thoroughly dried.

This would accomplish two things at one time, namely, prevent the striping material from drying too rapidly to wipe off the overflow on the edges, and also prevent the striping material attacking the other finish. After the stripe has dried overnight, if it is put on with a varnish bronzing liquid, a coat of clear lacquer can be applied over the entire work.

In fact, our recommendations would be to put on the stripe before the final coat of lacquer is applied, so as to protect the stripe from abrasion and wearing away through usage. This also will give more luster to the stripe.

The shiny gold effect, such as that on chinaware, can be produced by having a perfectly smooth surface to begin with, then applying a brighter shade of gold powders than is ordinarily used, making sure that these powders are very finely divided.

The powders can be mixed, either with a lacquer bronzing liquid or a varnish bronzing liquid. After the coat of bronze powder has dried, a coat of very pale varnish, or a coat of clear lacquer, can be applied over the gold to give the shiny gloss effect.—I. F.

When scientists make great discoveries, it doesn't take long for men in industry to work out practical applications of them.

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Preparation of the Wood Surface for Lacquering

Starting with wood glues, we may note what may happen with the various types and the effect they may have on the lacquer coating. There are two general classes of glue now in common use: namely, vegetable glue and animal glue. A vegetable glue is somewhat cheaper, can be more easily handled by skilled help, and does not dry as quickly as animal glue.

If a vegetable glue is used with lacquer some care should be taken to note that it is entirely dry before the first coat of lacquer is applied, and that an excessive amount of caustic has not been used in its preparation. This caustic would retain the water and act on the nitro-cotton, producing a white cast. Under these circumstances the author would recommend the use of animal glue.

After the veneer has been prepared, extra care should be used in the sanding. Lacquer does not fill as well as varnish because of its speed of drying, therefore the amount of extra labor spent on the preparation of the surface is well repaid by the results obtained and material saved.

Staining. The wood is now ready for staining. Many finishers prefer water stains, as they are less soluble in the solvents used in lacquer than are either spirit or oil stains, and there is less probability of their coming to the surface where the action of the sun's rays will bleach or discolor them.

After the wood has been stained it should be allowed to dry at least 24 hours before commencing the filling operation.

Filling. It is now generally conceded that the best and cheapest practice is to give the wood a wash coat of either shellac, imitation shellac or lacquer, followed by a light sanding before filling.

This method not only gives a better and smoother foundation for succeeding coats, but prevents the binder in the filler from being absorbed by any spongy or soft veneer, and also prevents the filler from turning gray or white. It generally saves a coat of varnish or lacquer and prevents not only trouble with the filler, but shrinkage of the finish as well.

From a paper contributed by Walter S. Edgar of Flood & Conklin Co., at the Annual Meeting of the A. S. M. E. in New York, Dec., 1926.

Lacquer Odors.

Many people like the smell of lacquers better than those of paints and varnishes. Lacquer gives off one smell, while the liquids are evaporating and another later—the residual odor. It is the residual odor that people object to. About one-half of the butyl acetate manufactured has a residual odor, due to impurities.

As to the relation between bad odor and danger to health there is no connection whatever. Lacquer liquids are not toxic. If bad odors indicated danger to health we would have no cheese eaters. Many substances which kill have no odor, among them the poison gases used in war days, and the carbon monoxide thrown off by an automobile motor. Materials in lacquer with or without odor are not poison from the odors.

The cough caused by lacquers used in a small room, or one without ventilation, is no indication of poison or injury to health. The men in the lacquer solvents fac-

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tories are constantly exposed to such odors; they wear no masks and are not injured in the least by such exposure.

The odor cast off by lacquers while the solvent liquids are evaporating are of short duration and are of no consequence. There is no excuse for manufacturers turning out lacquers having a residual odor; they can avoid that by using pure solvents.—A. Orr.

Lacquering Water Heaters

We have derived considerable benefit from the practical suggestions in regard to finishing contained in your monthly publication, "Industrial Finishing."

At the present time we are using approximately 150 gallons of lacquer and 75 gallons of thinner per month. We started to use lacquer about three and one-half years ago. It was suggested to us when we were on the look-out for a finishing material that would be more durable than enamel, and would speed up production.

The outer jacket of our heater is finished in four coats of lacquer. The first two coats consist of lacquer mixed with aluminum bronze, and they are applied simultaneously. After the two ground coats have had an opportunity to season for approximately 24 hours, we apply two clear coats to make the finish more lustrous and harder. — Everhot Heater Co.

Street Car Colors

The exhibit of the St. Louis Car Co., at the Greater St. Louis Exposition, last fall, was an attractive one. Miniature models of the cars made for the various cities were shown. The cars were

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exact reproductions of the various products, even to the paint and trim.

The Grand Rapids car has a body of Rivera blue, a dark vermillion front, and the trim is a cream color.

Brooklyn cars show a Casino red body and azure blue front trimmed with citron yellow.

Seattle cars are a mummy brown, polo tan front, desert sand trim.

For Fort Wayne, Indiana, Coronado tan body, old ivory and light vermillion front, and moss green trim.

Memphis: body in coach green, old ivory and deep orange front, and desert sand trim.

The Illinois Traction cars are a maroon color with tangerine trim.

All the work is in enamel and varnish.—E. F. Werner.

Lacquer Finish Without Rubbing.

There are a number of concerns who cannot afford to spend much time rubbing the finish on their goods, and there are also concerns who cannot afford to do any rubbing whatsoever.

I happen to be acquainted with a few of such concerns, and one of them seems to solve this problem by taking its regular pyroxylin finishing lacquer—which by the way is a very tough lacquer and one that will stand considerable punishment—and adding about ten percent of a flat lacquer.

While the above will not give a real imitation rubbed finish, such as would be obtained through the use of a regular flat lacquer, it does tend to give a fairly smooth finish. The advantage in this is

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that most flat lacquers are not as tough as regular rubbing lacquers, and if a regular flat lacquer is used the film will not be as tough as desired. However, to concerns who wish a tough finish and one that is fairly smooth without rubbing, the above method is recommended.—C.H.J.

Sell Used Thinners

Many concerns using pyroxylin lacquers or enamels also purchase a cleaning thinner of some sort. As a rule, this cleaning thinner is rather inexpensive, and after it is used for such purposes as cleaning spraying equipment, it is usually thrown away.

A good way to plug one of the leaks in the high-production costs and overhead of the finishing department, is to sell all of this used cleaning thinner, or any dirty thinner, to a concern that finishes leather.

The writer has found that leather companies, who finish their own goods with pyroxylin enamels, can use this old thinner very nicely. Perhaps they will pay just a small amount per gallon for it, say from 15 to 25 cents, but after a drum of it has been saved up, it will bring quite a little sum.—J.C.H.

Second Coat Paints

On the assumption that the primer is satisfactory, the second coat must fulfill the following conditions:

For exterior work, as for instance with oil paints on wood, the second coat should be slightly more elastic than the primer, although the primer may carry more oil. It must not be overlooked that part of the oil in the

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primer goes into the wood, whereas practically none of the oil in the second coat is absorbed by a perfectly dry undercoat.

There is no exception to the rule that a quick-drying and inelastic paint over a slow-drying elastic undercoat will invariably show cracks and checking. This is true also of varnish, for instance a coat of shellac over a slow-drying finishing varnish will develop cracks in a very short time. This principle is now utilized in producing the novelty finishes termed "crackle", which have already been described in this magazine by other writers on crackle finishes, with lacquers as well as with colored enamels.

Chalking

An insufficiency of oil in either the primer or subsequent coats will generally lead to chalking. This is true especially of white lead and other heavy pigments which take up only a minimum amount of oil in grinding. It is quite obvious that 92-lbs. of white lead ground in 8-lbs. of linseed oil will chalk sooner than 92-lbs. of zinc oxide ground in 23.31-lbs. or 3 gallons of oil, therefore the painter or finisher must make allowances for the kind of material he is using.

Subject to Faults

Exterior oil paints are subject to many faults. For instance, if an inferior grade of linseed oil has been used in either the primer or top coats, the paint is liable to not dry properly, or it is liable to scale off, chalk, or crack according to the pigment composition.

Paints containing an excess of China clay, yellow ochre, or other clay-like pigment, do not properly bind to bare wood nor to prior coats of paint, and in time

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will peel off. As previously remarked, an excess of zinc oxide results in the formation of a hard enameled surface without any "tooth", hence it is difficult to repaint such old surfaces, and the chances are that the paint will become so hard it will crack.

For Repainting

Vandyke brown and similar pigments with an organic base should not be used for tinting house paints, because such paint is subject to mildew.

In repainting old work, if the surface has become enameled to such an extent that it will not hold the subsequent coat of paint, the enameled surface may be softened by going over it with a mixture consisting of three parts of boiled linseed oil, four parts of benzine, and one part of solvent naphtha, or benzole. Too much benzole will act as a paint remover, therefore the quantity should be regulated according to the hardness of the painted surfaces.—E. Perry.

Never allow gases to accumulate in the room. Fires have been started by a spark from the motor igniting gas which had accumulated in and about a spray booth. The spray had been run for a time without the fan in operation, and when the motor was started the explosion occurred.

An experienced spray man can turn out a good job with a mediocre lacquer, and a careless or inefficient operator can make the best lacquer on the market look like a very inferior brand of merchandise. Therefore, it stands to reason that the application of the modern lacquer finish is of utmost importance.

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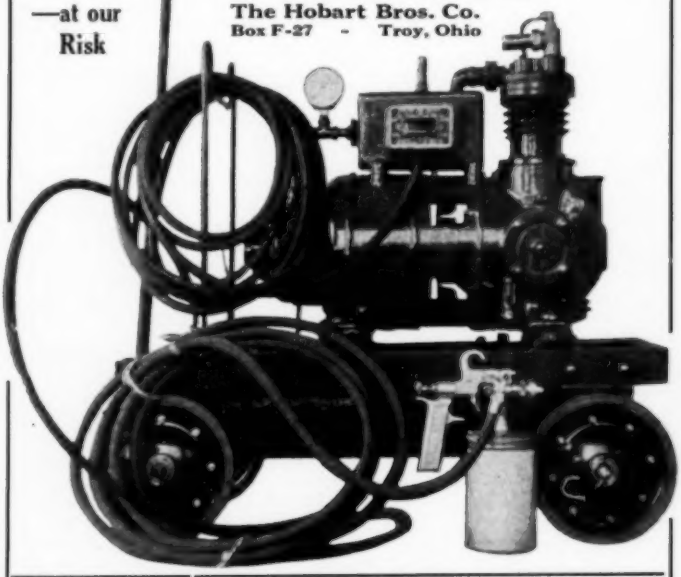

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THE ARCO PYROXYLIN LACQUER SYSTEM

The NEW *Lacquer Finish*

VEILING lacquer offers the manufacturer a new treatment in the decoration of his product, which results in more attractive, more saleable merchandise.

The new veiling lacquer treatment is inexpensive. As a matter of fact it is less costly than most any other high-grade finish you might use.

May we send you detailed information?

The Ault & Wiborg Co.
Varnish Works
CINCINNATI, OHIO

Viborite
VEILING LACQUER